

CITY OF ALISO VIEJO GREEN CITY INITIATIVE



~~December 2012~~ March, 2013

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INTRODUCTION

Introduction

Aliso Viejo incorporated in 2001 as the 34th and newest Orange County city. The City encompasses approximately 7 square miles and is bordered by Laguna Beach to the west, Laguna Woods to the north, Laguna Hills to the east and Laguna Niguel to the east and south. Prior to cityhood, Aliso Viejo was an unincorporated area within the County of Orange which had been completely master-planned by the Mission Viejo Company.

Aliso Viejo began its Green City Initiative (Green City Initiative) in July, 2010, with the City Council authorizing preparation of a greenhouse gas emissions inventory, establishment of a comprehensive menu of best practices action items to implement sustainable living practices, and commencement of a substantial public outreach and education program.

The Green City Initiative implements the City Council's vision for Aliso Viejo as a leader in sustainable practices. The Green City Initiative is intended to realize this vision and involves the following.



- The Green City Initiative is dedicated to creating a more sustainable, livable Aliso Viejo for its residents, and businesses ~~and community~~, through increased efficiency, reduced cost and reduction in greenhouse gas emissions.
- The Green City Initiative is about saving residents and businesses money over time through smart energy and water use.
- The City intends to take a leadership role in implementing the Green City Initiative and institutionalizing a "culture of sustainability" in Aliso Viejo. By employing the implementation measures in the Green City Initiative, Aliso Viejo intends to maximize efficiency and use of resources in its municipal operations, activities and facilities, ~~and to providing provide~~ sustainable examples for the community, its residents, business owners and developers.
- The Green City Initiative is intended to enhance Aliso Viejo's ability to maintain a competitive economic advantage with other cities in south Orange County. An energy efficient "green" residential and business environment will attract and retain investment money and business income to our City.
- The Green City Initiative will serve as the basis for a new "Green City" section in a comprehensive update to the City General Plan planned for 2013.

- The Green City Initiative is Aliso Viejo's response to "climate change." We will be using the term "climate change" rather than the term "global warming." "Global warming" refers to the average increase in the atmosphere's temperature caused by increased greenhouse gas emissions from human activities. "Climate change," according to the National Academy of Sciences, refers to any significant, measurable change of climate lasting for an extended period. This lasting change can be caused or accelerated by natural factors AND human activities. Therefore, "climate change" is used more frequently because it encompasses all changes to climate and is not limited to temperature increase. Importantly, "climate change" implies the possibility it can be slowed or reversed with appropriate and necessary efforts of us all. Moreover, climate change is a widely accepted fact among the scientific community. The only uncertainty about climate change is the extent of its impacts over time. Our City recognizes climate change affects every community at a local level although climate change is ~~a~~ global ~~issue~~ in scale.
- The Green City Initiative is in part Aliso Viejo's response to State legislative requirements. Specifically, Assembly Bill 32 and recent amendments to the California Environmental Quality Act.

The Aliso Viejo Green City Initiative is designed from the premise that local governments and communities are uniquely capable of addressing emissions from energy consumed in buildings, water usage, solid waste sent to landfills, and transportation. The Green City Initiative not only incorporates adopted City policies, ordinances, implementation measures and practices, but also contains new and more comprehensive policy direction and voluntary implementation measures designed to achieve its goal of reducing greenhouse gas emissions. In particular, the Green City Initiative does the following:

- Describes greenhouse gas emissions sources and quantities in the City
- Recommends initiatives and voluntary implementation measures the City and community can take to achieve greenhouse gas reduction
- Identifies and discusses community benefits such as increased green job opportunities, and improved public health

The Aliso Viejo Green City Initiative is divided into the following sections: ~~water conservation,~~ ~~energy conservation,~~ ~~vehicle management and transportation,~~ ~~waste management and recycling,~~ and ~~land use~~. Each section includes related goals (stated as "Initiatives") and Implementation measures formulated by the City and by the Aliso Viejo community to increase efficiency and reduce greenhouse gas emissions. The Green City Initiative recommends the City develop a monitoring program to ~~monitor~~ assess the effectiveness of the Initiative.

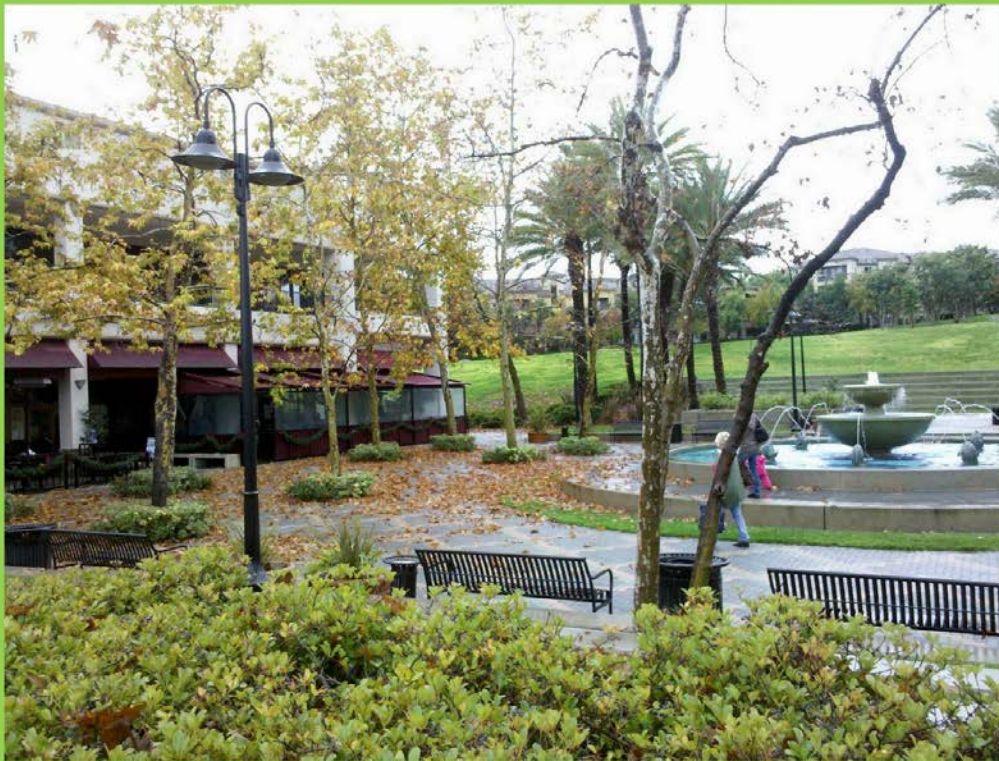
Public Participation in the Green City Initiative Process

The City of Aliso Viejo desires a Green City Initiative the community will support and help implement. Thereby, the City conducted twelve public workshops during the Green City Initiative process to elicit community involvement and ownership of the Green City Initiative. More than 110 members of the Aliso Viejo community attended one or more of the workshops. Those attending included residents, business owners and employees, students from Soka University, Aliso Niguel High School and Sage Hill School, members of volunteer organizations, and representatives of State and regional agencies. The public workshops were organized into the following categories for discussion: water conservation; energy conservation; vehicle management and transportation; waste management and recycling; and, land use. City Planning Department staff, City consultants and workshop attendees identified, discussed and elaborated Green City Initiative goals and implementation measures that comprise the basis of this Green City Initiative Plan.

“More than 110 members of the Aliso Viejo community attended one or more of the workshops.”

In addition, City Planning Department staff made presentations to, or conducted relevant meetings with, representatives of the Orange County Building Industry Association, Orange County Business Council, Orange County [Branch Association](#) of [the California](#) Realtors, [Association](#), NAIOP-Commercial Real Estate Development Association, KOCE television, the Aliso Viejo Community Association (AVCA), and to teachers/student groups at schools within Aliso Viejo to discuss the Green City Initiative and solicit comment and involvement in the Green City Initiative process.





BACKGROUND

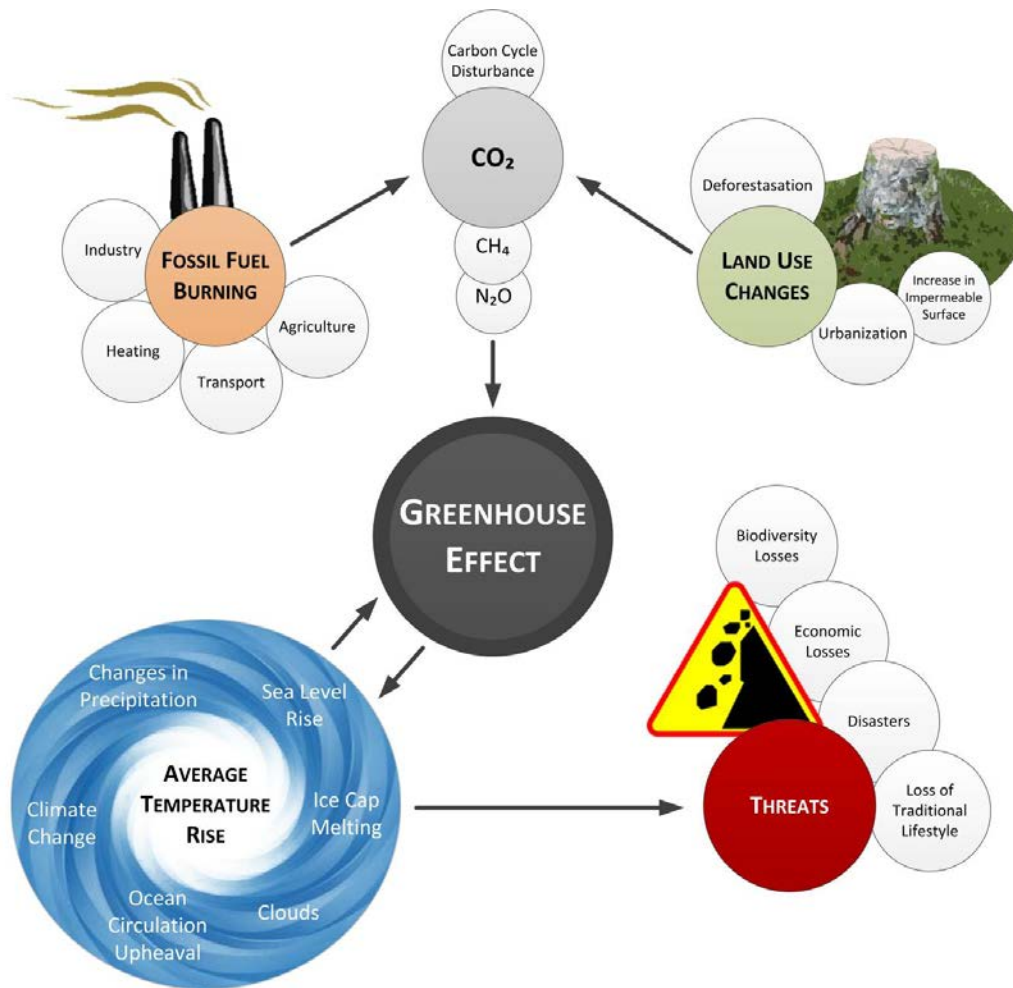
What is Climate Change?

Climate change is a long-lasting variation in the average weather of the earth, measured by changes in wind patterns, storms, precipitation, and temperature. Climate change is in part exacerbated by many daily activities, such as using natural gas to heat buildings, burning gasoline to drive vehicles, generation of electricity from fossil fuels and transport of water. All these activities release greenhouse gases, including carbon dioxide (CO₂), methane (CH₄), and nitrous oxide (N₂O), into the atmosphere. Emission of these greenhouse gases traps an additional amount of heat within the atmosphere, eventually leading to long-term changes in climate. Science has clearly established global climate change as a real and significant threat to humankind. This threat becomes more problematic when viewed in the context that the United Nations estimates world population will increase by 20% (to 9 billion) by 2050. Added population will generate added demand for resources and energy and increase the "greenhouse effect" that can negatively impact our quality of life.

Climate scientists have been investigating greenhouse gas increases for decades. ~~Science has clearly established global climate change as a real and significant threat to humankind. This threat becomes more problematic when viewed in the context that the United Nations estimates world population will increase by 20% (to 9 billion) by 2050. Added population will generate added demand for resources and energy and increase the "greenhouse effect" that can negatively impact our quality of life.~~

The greenhouse effect refers to a phenomenon wherein gases (e.g., water vapor, carbon dioxide, methane) in the earth's atmosphere trap the sun's heat in the earth's atmosphere. These "greenhouse gases" act similarly to a glass wall by preventing solar heat from returning into outer space. Greenhouse gases also help maintain the earth's temperature at an average 60 degrees Fahrenheit, which enables life as we know it to exist. Disruption in the natural balance of greenhouse gases can increase earth's temperature and affect weather patterns. The National Academy of Sciences reports the earth's surface temperature has increased approximately 1 degree Fahrenheit in the past century and indicates warming has accelerated during the past two decades. Climate scientists estimate potential increases in temperature could be 1-5 degrees Fahrenheit by 2050; and 4-9 degrees Fahrenheit by 2100. The increases are expected to be more pronounced in summer than winter and to be experienced more severely in inland areas rather than coastal areas. In addition, heat waves are expected to increase in frequency with individual heat waves also showing a tendency toward becoming longer and extending over a larger area. Greenhouse Gas Emissions remain in the atmosphere for decades; therefore, temperature changes over the next 30-40 years are already determined by past emissions.

~~Greenhouse Gas Emissions remain in the atmosphere for decades; therefore, temperature changes over the next 30-40 years are already determined by past emissions.~~ Increasing concentrations of greenhouse gases likely will accelerate the rate of climate change. Atmospheric concentrations of CO₂ have increased nearly 30% since the advent of the Industrial Revolution. During this period, CH₄ concentrations have more than doubled and NO_x concentrations have risen by approximately 15%. The National Parks Service has indicated release of CO₂ during the last few hundred years has increased greatly; approximately 98% of CO₂ emissions, 24% of CH₄ emissions, and 18% of NO_x emissions in the United States are the result of fossil fuel combustion for heating, energy and transportation.



Effects of Climate Change

Climate change has caused a reduction in Arctic sea ice, which allows darker polar oceans to absorb more sunlight and thereby increase regional warming, accelerate sea ice melting, and enhance Arctic warming over neighboring and currently frozen land areas. Release of methane currently trapped in frozen ground in the Arctic tundra will increase with regional warming and melting of the ground, lead to further and more

rapid warming, and result in increased permafrost melting. In addition, continued warming in the Amazon could cause significant rainfall loss and large scale dying of forest vegetation, which will further release CO₂. Scientists estimate precipitation could increase between 12 and 35 percent by 2050, which in turn could increase sea level by 12-18 inches by 2050 and 21-55 inches by 2100. The National

Academy of Sciences predicts an average degree increase of 1F – 4F in global surface temperature in the next 50 years and a degree increase of 2.2F – 10F the next century. In addition, climate change is expected to increase spread of diseases and pest vectors and place additional stress on vulnerable species and ecosystems, thereby leading to a shift in species composition. California may experience significant impacts such as threats to coastal infrastructure, increased numbers of large wildfires, serious threats to public health, and water shortages. Impacts associated with climate change make action at all levels urgent and undeniably necessary.

Health and Environmental Impacts

~~A warm climate caused in large part by increased greenhouse gas emissions will have harmful effects on public health and the environment. The years 1995-2005 saw the warmest global temperature recorded in instrumental history (since 1850). Higher temperatures will cause more rainfall than snowfall. This will impact water supplies for every user of water in California.~~

Climate change threatens health and well-being of Californians through a variety of environmental changes, including more severe extreme heat and other weather events, a decline in air quality, increases in allergenic plant pollen, more frequent wildfires, and altered environmental conditions that foster spread of communicable and vector-borne diseases. Climate change also threatens basic life support systems, on which humans depend – water, food, shelter, security. Segments of the population at greatest risk include the elderly, infants and individuals suffering from chronic heart or lung disease, ~~persons with mental disabilities,~~ the socially and/or economically disadvantaged, and those who work outdoors. Heat waves can be expected to ~~result in a major impact on public health, including~~

~~decreasing decrease~~ air quality, ~~and increasing~~ mosquito breeding and mosquito borne diseases. (Vector control districts throughout California are evaluating how they will address expected changes to California's climate.) The elderly, the young, and those vulnerable populations that do not have resources to cope with costs and to adapt to changes expected to impact the community will need assistance. Social equity issues related to unequal distribution of resources and increased costs to address community wide health risks will need to be addressed proactively to reduce potential financial strain on Californians.

Increased temperature, combined with longer summer seasons, also will reduce soil moisture levels, which in turn will necessitate increased irrigation, increase need for air conditioning use, increase rate and spread of wildfires, and stress the electrical infrastructure that serves Aliso Viejo. Increased flooding due to more intense and less predictable storms will require proactive efforts to reduce potential for damaging erosion.

Changes in Air Quality

Research indicates climate change influences on atmospheric processes will promote formation of ground-level pollutants, such as ozone and secondary aerosols (particulate matter), and that these increases could offset much of the potential gain achieved through air pollution control measures, (a phenomenon referred to as the "climate penalty:"). Short-term effects of air pollution include irritation to eyes, nose and throat, and increased incidence of upper respiratory inflammation. Also, short-term air pollution tends to aggravate medical conditions of individuals with asthma and emphysema. According to the California Air Resources Board, current exposures to ozone and particulate matter cause approximately 8,000 deaths, 9,500 hospitalizations, 200,000 cases of asthma and lower respiratory symptoms and nearly

5,000,000 school absences in California each year.

Climate change can affect ~~exposure to~~ air pollution in various ways. Increasing air temperatures ~~in turn~~ increases ozone levels, which are formed by reactions between nitrogen oxides and hydrocarbons released from motor vehicle combustion of fuel. Increasing temperatures can change human behavior in ways that increase air pollution, such as more frequent or longer duration of air conditioner use and/or landscape watering. Climate change can affect patterns of air mixing and air flow that transport pollutants. Increased temperatures can increase emission of pollutants called volatile organic compounds from plants and vegetation.

Floods and Droughts

Californians may face risks to public health from drought due to impacts on water supply and quality, food production, and risks of waterborne illness. More winter precipitation will fall as rain rather than snow, which in turn will result in more intense and more frequent rainfall events and potentially more extensive flooding.

Wildfires

Wildfires are likely to increase in number and size throughout California as a result of increased temperatures induced by climate change. Wildfire risk is based on a combination of factors, including precipitation, winds, temperature, and vegetation. All these factors are susceptible to increased warming. Even under a "medium" warming scenario predicted by the Intergovernmental Panel on Climate Change (IPCC), wildfire risk likely will increase by 55 percent in California (California Climate Change Center, "Our Changing Climate Assess the Risks to California," 2006). Drought results in increased frequency and duration of wildfires, which in turn can lead to immediate and long-term adverse public health problems due to exposure to smoke.

A University of California, Merced and RAND Corporation study estimated in the next 15-20 years the cost of wildfires to residential properties could escalate to more than \$2 billion annually and to more than \$10 billion annually by the end of the 21st century. A University of California, Berkeley and Next10 study estimates over \$2.5 trillion of California's real estate assets (of \$4 trillion) are "at risk from extreme weather events, sea-level rise, and wildfires, with a projected annual price tag of \$300 million to \$3.9 billion."

Biodiversity and Habitat

Climate ~~Change~~ and warming temperatures affect biological resources and habitat in several ways. Barriers to species migration and movement occur from increases in invasive species, as well as changes in the structure of the natural community, timing disruptions between predators and prey and between pollinators and plants, and loss of ecosystem goods and services.

Biodiversity and impacts to habitat due to precipitation change include changes in riparian communities and structure, decreased water availability to fish, wildlife and plants, and increased susceptibility to pests, disease, wildfires and invasive species.

Biodiversity and habitat impacts due to sea level rise include inundation of permanent coastal habitat (resulting in alteration of dune habitat and coastal wetlands and coastal habitat loss of migratory birds, shellfish and endangered plants), reduction of fresh water resources due to salt water intrusion, increases in invasive species, and reduction in wetland habitat for commercial and sport fisheries.

Ocean and Coastal Resources

Approximately 80% of Californians live or work in coastal counties. Therefore, they will be at risk from a range of climate impacts specific to these

regions. In 2006, the California Climate Change Center reported a historic sea level rise of 7 inches in the last century and projected an additional rise of 22-35 inches by the end of the 21st century. Since that time, [numerous](#) other studies have published projected ranges of 7-23 inches, 20-55 inches, and 32-79 inches for the same period. Differences in projections are attributable to different methodologies used in the studies and whether glacier ice melt is included in calculations.

Population changes in coastal areas are anticipated. Relocation of marine species and southern and exotic species may become invasive. Changes in marine food systems and in commercial and recreational ocean fishery and economic impacts will occur.

A recent Pacific Institute study estimates a 1.4 meter sea level rise will occur over the next century and "put 480,000 people at risk of [what is today considered] a 100-year flood that would become a common event and cost \$100 billion to replace flooded property assuming current levels of development.

Water Management

[Higher temperatures will cause more rainfall than snowfall. This will impact water supplies for every use of water in California.](#) Nearly 75% of California's available water supply originates in the northern one-third of the State (north of Sacramento); 80% of water demand occurs in the southern two-thirds of the state. Climate change and warming temperatures will have several impacts on water management. Water supply from the Sierra snowpack will be reduced. Increased evapotranspiration rates from plants, soils and open water surfaces will occur. There will be moisture deficits in non-irrigated agriculture, landscaped areas and natural systems, thereby increasing irrigation needs.

Agriculture

Predicted impacts on agriculture from climate change and accompanying warming temperatures include changes in crop yields, types and cultivars, invasions of new weed species and expanded ranges of existing weeds, new disease and pest invasions and expanded ranges of existing diseases and pests, flooding and crop pollination changes, decreased production from animals, and increased plant and animal vulnerability to disease.

Precipitation changes will affect agriculture through loss of water supply and reliability, loss of irrigated lands, crop production and food security, increased pests, diseases and invasive species, increased fire risk to range land, and adverse effects on crop production resulting from deteriorating changes in ozone and air quality.

Forestry

Predicted impacts on forestry from climate change and warming temperatures include increased tree mortality, increased invasive species, and spread of insects and diseases. In addition changes in precipitation will affect forestry by causing longer dry periods and moisture deficits, increased flooding and runoff that results in increased erosion and soil nutrient loss, and increased drought conditions that will result in limits to seeding and sapling growth, increased wildfire risk and economic losses.

Transportation and Energy Infrastructure

Higher average temperatures affect energy production, transmission and demand and result in increase in cooling demands, decrease in water availability for hydropower generation, risk of additional brown-outs and black-outs, and transmission efficiency impacts in hot weather. Temperature extremes also may result in increase of road and railroad track bucking and decrease in transportation safety and higher costs.

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Cities throughout the United States and, in particular throughout California are responding to climate change in the United States. The City of Aliso Viejo recognizes challenges climate change poses to our community and is committed to proactively addressing the issue. Our response to this threat presents opportunities to create and maintain a more sustainable, livable and economically vibrant community. We can keep dollars in our local economy, create new "green" jobs and, most importantly, improve the quality of life in the community by using energy more efficiently, harnessing renewable energy to power buildings, enhancing access to sustainable transportation modes, and increasing the scope of waste we recycle.

“Scientists estimate precipitation could increase between 12 and 35 percent by 2050, which in turn could increase sea level by 12-18 inches by 2050 and 21-55 inches by 2100.”





LEGISLATIVE CONTEXT

Regulations

National

The United States is a signatory to the United Nations Framework Convention on Climate Change, which committed signatories to "achieve stabilization of GHG concentrations in the atmosphere at a low enough level to prevent dangerous anthropogenic interference with the climate system." The goal is not directly associated with a specifically identifiable emissions reduction target or commitment.

The United States government establishes fuel economy standards for new automobiles and trucks. The 2007 Energy Bill requires the National Highway Traffic Safety Administration to develop phased requirements to achieve fleet-wide average performance of 35 miles per gallon by 2020. On May 19, 2009, the President announced a new National Fuel Efficiency Policy to increase fuel economy by more than 5 percent by requiring a fleet-wide average of 25.5 miles per gallon by 2016, beginning with model year 2012.

Massachusetts vs.

Environmental Protection Agency

In 2007, the United States Supreme Court decided the case of the State of Massachusetts v. EPA (549 U.S. 497). In that case, the Supreme Court held that greenhouse gases fit within the Clean Air Act definition of a pollutant and that the EPA did not have a valid rationale for not regulating greenhouse gases. In response to this ruling, EPA made an endangerment finding that greenhouse gases pose a threat to the public health and welfare. EPA's endangerment finding was the first step necessary for establishment of federal greenhouse gas regulations under the Clean Air Act. The EPA has proposed greenhouse gas standards for light-duty vehicles as part of its

effort to reduce greenhouse gas emissions and to meet its obligation under the Clean Air Act.

State of California

In California, various pieces of legislation, several executive orders, and a host of policies and programs have been adopted in an effort to establish a regulatory framework for reducing greenhouse gas emissions. California can draw on substantial scientific research conducted by experts at various state universities and research institutions. More than a decade of concerted research has demonstrated to scientists that early effects of climate change are already underway in California – ~~this~~ demonstrated by increased average temperatures, changes in temperature extremes, reduced Sierra Nevada snowpack, sea level rise and ecological shifts. Many ~~of~~ such changes are accelerating. Generally, research indicates California should expect overall hotter and drier conditions, increased average temperatures, rising sea levels, and increasing intensity of extreme weather events such as heat waves, wildfires, droughts and floods.

Assembly Bill 32

Assembly Bill 32 (AB 32, also known as the Global Warming Solutions Act of 2006) commits the State to reduce greenhouse gas emissions in California to 1990 levels by 2020 and to 80 percent below 1990 levels by 2050. AB 32 requires the California Air Resources Board (CARB or Board) to develop regulations and market mechanisms in pursuit of that mandate. Mandatory emissions caps for significant sources (e.g., electricity producers, cement plants) began January 1, 2012. CARB is the lead agency for implementing AB 32. CARB met the first milestones in 2007: developing a list of discrete early actions to begin reducing greenhouse gas

emissions, assembling an inventory of historic emissions, establishing greenhouse gas emission reporting requirements, and setting the 2020 emissions limit.

AB 32 required the ARB to develop a Scoping Plan outlining the State's strategy to achieve the 2020 greenhouse gas emissions limit. CARB adopted a Scoping Plan in 2008¹. The Scoping Plan proposes a comprehensive set of actions designed to reduce overall greenhouse gas emissions in California, improve our environment, reduce our dependence on oil, diversify our energy sources, save energy, create new jobs, and enhance public health.

AB 32 Scoping Plan Reduction Goals

Reducing greenhouse gas emissions to 1990 levels means cutting approximately 30 percent from business-as-usual emission levels projected for 2020, or about 15 percent from today's levels. On a per-capita basis, that means reducing our annual emissions of 14 metric tons of carbon dioxide equivalent (CO₂e) for every man, woman and child in California ~~down~~ to about 10 metric tons per capita by 2020.

Through the Scoping Plan and Attorney General guidance, the local government equivalent contribution to the AB 32 statewide emission reduction target has been interpreted as 15% below baseline (recommended 2005-2008) levels by 2020. The Scoping Plan specifically cites local government action as an integral partner to achieving the State goal and provides recommendations and guidance to support these actions. However, neither AB 32 nor the CARB Scoping Plan implementing AB 32 specifically mandates that each individual city adopt its own greenhouse gas reduction plan to meet AB 32 targets on a city-specific basis.

Senate Bill 375 (SB 375)

[The](#) Sustainable Communities and Climate Protection Act of 2008 (Sustainable Communities, SB 375, Steinberg, Statutes of 2008) enhances California's ability to reach its AB 32 goals by promoting good planning with the goal of more sustainable communities.

Sustainable Communities requires ARB to develop regional greenhouse gas emission reduction targets for passenger vehicles. ARB is to establish targets for 2020 and 2035 for each region covered by one of the State's 18 metropolitan planning organizations (MPOs).

Each of California's MPOs then prepare a "sustainable communities strategy (SCS)" that demonstrates how the region will meet its greenhouse gas reduction target through integrated land use, housing and transportation planning. Once adopted by the MPO, the SCS will be incorporated into that region's federally enforceable regional transportation plan (RTP). ARB is also required to review each final SCS to determine whether it would, if implemented, achieve the greenhouse gas emission reduction target for its region. If the combination of measures in the SCS will not meet the region's target, the MPO must prepare a separate "alternative planning strategy (APS)" to meet the target. The APS is not a part of the RTP.

Sustainable Communities also establishes incentives to encourage implementation of the SCS and APS. Developers can get relief from certain environmental review requirements under the California Environmental Quality Act (CEQA) if their new residential and mixed-use projects are consistent with a region's SCS (or APS) that meets the target (see Cal. Public Resources Code §§ 21155, 21155.1, 21155.2, 21159.28.).

¹ Climate Change Scoping Plan; a framework for change, December 2008, California Air Resources Board

2012 Southern California Association of Governments Sustainable Communities Strategy

The Southern California Association of Governments (SCAG) is the MPO encompassing ~~the counties of~~ Imperial, Los Angeles, Orange, Riverside, San Bernardino, and Ventura counties. ~~They SCAG prepared~~ the RTP for the SCAG region, with input from each of the counties and county transportation commissions. SCAG is also responsible for developing the Sustainable Communities Strategy for the SCAG Region, known as the SCAG Regional SCS.

However, in the SCAG region, SB 375 also allows for a subregional council of governments and county transportation commission to work together to propose a subregional SCS. As one of these subregions, Orange County has availed itself of this opportunity to prepare its own subregional SCS (OC SCS). ~~As long as~~ Because the OC SCS ~~follows followed the~~ requirements of SB 375, SCAG ~~will~~ incorporated it into the SCAG Regional SCS.

The OC SCS begins with ~~the~~ setting of current population, housing, and employment in Orange County, and then describes projected long-term trends for these socio-economic variables. The resulting assessment is ~~this:that~~ a majority of Orange County's projected growth of population, housing, and employment will occur near existing and future job centers, which will positively impact transportation patterns and therefore be beneficial to GHG emission reductions.

The projected growth in Orange County housing units between 2008 and 2020 as well as between 2008 and 2035 will be sufficient to house the anticipated population growth in the subregion. Further, Orange County will create housing adequate to accommodate employment growth during these periods.

Because there is an indisputable interconnectedness between Orange County's population, housing and employment and ~~the~~ transportation systems that support them, the OC SCS also delineates the foundational transportation systems that currently exist in Orange County. Transportation systems described include freeways, arterial streets and local roads, rail and bus transit, bikeways, and demand responsive services and transportation demand management.

~~Central to the OC SCS are the s~~Strategies identified to reduce GHG emissions are central to the OC SCS. These strategies illustrate that there is already a collective effort by many Orange County jurisdictions, agencies, and groups to link transportation and land uses through a variety of processes and an array of progressive measures. ~~The s~~Strategies outlined in the OC SCS include land use-related strategies, transportation system improvements, and best management practices (BMPs).

Orange County's land use strategies include the following:

- Support Transit-Oriented Development.
- Support infill housing development and redevelopment.
- Support mixed-use development and improve walkability of communities.
- Increase regional accessibility ~~in order~~ to reduce vehicle miles traveled.
- Improve jobs-housing ratio.
- Promote alternatives to single-occupant automobile use.

Orange County's transportation system strategies include the following:

- Improve and expand freeway, high-occupancy vehicle (HOV), toll road, and express lane options to reduce delay.
- Apply Transportation System Management practices to the currently planned arterials street system to maximize efficiency.

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- Improve attractiveness of transit modes through enhanced service, frequency, convenience, and choices. Improve linkages between transit options to diminish automobile travel.
- Expand and enhance Transportation Demand Management (TDM) practices to reduce barriers to alternate travel modes and attract commuters away from single occupant vehicle travel.
- Continue to provide highway and roadway pricing measures.

Orange County's Best Management Practices include the following:

- Transportation infrastructure investments such as implementation of smart streets, improving links between travel modes, and providing enhanced bus stops.
- Transportation system management measures that enhance the capacity of the existing system through better management and operation of the system.

Senate Bill 97

Consistent with Senate Bill 97 (SB 97) the California Natural Resources Agency ~~has~~ adopted amendments to the State CEQA Guidelines requiring analysis of climate change impacts as part of ~~the~~ environmental review of projects. The aforementioned amendments to the State CEQA Guidelines became effective March 18, 2011. Now that State CEQA Guidelines confirm the need for climate change analysis and feasible mitigation for projects in all localities in California, those localities that offer a Greenhouse Gas Emissions Reduction Plan may prove to be more attractive for development (all other factors being equal). The Aliso Viejo Green City Initiative could offer developers, as well as the City itself, potential cost-savings, time savings, and predictability.

Assembly Bill 1358

The Complete Streets Act of 2007 (AB 1358) ensures transportation plans of communities in California will meet needs of all users of the roadway including pedestrians, bicyclists, public transit riders, motorists, children, the elderly, and the disabled. AB 1358 is designed to make roadways safer and more convenient for those who choose to walk, ride a bicycle, or ride transit. Safer roadways enable more people to gain health benefits by choosing an active form of transportation and benefit all by reducing traffic congestion, auto-related air pollution, and production of greenhouse gas emissions. AB 1358 requires the legislative body of a city or county, upon revision of its general plan, to identify how the jurisdiction will provide for routine accommodation of all users of the roadway, including motorists, pedestrians, bicyclists, individuals with disabilities, seniors, and users of public transportation. This legislation also directs the California State Office of Planning and Research to amend guidelines for development of general plan circulation elements so building and operation of local transportation facilities safely and conveniently accommodate everyone regardless of mode of travel. The Act took effect on January 1, 2009.

Assembly Bill 811

Assembly Bill 811 allows local governments to establish assessment districts to fund energy efficiency and renewable energy projects. This Bill was modeled on the successful Berkeley First programs and Palm Desert Energy Independence and provides an important opportunity to provide monetary resources for owners of existing buildings to make energy efficiency improvements and to add on site renewable energy to their properties.

Assembly Bill 1493

In December, 2005, California petitioned the United States Environmental Protection Agency to allow the State to require more stringent fuel economy standards. On July 1, 2009, the

Environmental Protection Agency granted California a waiver that enables California to enforce stricter tailpipe emissions on new motor vehicles. The waiver requested enforcement of the stricter standards beginning with the 2009 model year, but has not yet been implemented. Implementation of more stringent fuel economy standards will reduce automobile emissions intensity.

Senate Bill 1078

This Bill passed in 2002, established Renewable Portfolio Standards for each State investor-owned utility to acquire 20% of its electricity from renewable resources by 2010 and 33% by 2020.

Senate Bill 1368

This Bill, passed in 2006, establishes emissions performance standards for new and existing power plants that produce energy sold to publicly-owned and investor-owned utilities.

Senate Bill 7

This Bill, passed in 2009, requires the State to achieve a 20% reduction in per capita water use by 2020. Noncompliance by local water providers will make them ineligible for State grant or loan funding.

Senate Bill 407

This Bill, passed in 2010, requires [all homes in California to retrofit](#) inefficient plumbing fixtures ~~be replaced~~ with more efficient models ~~at time of property sale or improvement~~ [by 2017](#).

Assembly Bill 939

This Bill, passed in 1989, established the goal of achieving a statewide diversion rate of 50% and requires cities and counties to divert a minimum 50% of their waste stream for reuse or recycling.

Senate Bill 1016

This Bill, passed in 2008, established per capita disposal rate requirements and goals for local

agencies in California. Requirements are expressed in pounds per person per day.

Assembly Bill 341

The Governor signed Assembly Bill 341 into law on October 5, 2011. Among its provisions, the Bill establishes a statewide policy goal of source reducing, recycling or composting at least 75% of solid waste generated by 2020 and requires a business (defined as a commercial or public entity) that generates more than 4 cubic yards of commercial solid waste per week or a multifamily residential dwelling of 5 or more units to arrange for recycling services on and after July 1, 2012. In addition, each jurisdiction is required to implement a commercial solid waste recycling program that consists of education, outreach and monitoring of businesses that is appropriate for that jurisdiction and is designed to divert commercial solid waste from businesses.

Title 24 – Building Energy Efficiency

California Energy Efficiency Standards for Residential and Nonresidential buildings helps Californians reduce energy bills, increase energy delivery system reliability, and contributes to economic prosperity. Title 24 helps reduce emissions intensity of new buildings by establishing performance standards for certain building related energy loads. The 2008 Building Energy Efficiency Standards were adapted to:

- Provide California with an adequate, reasonably-priced, and environmentally-sound supply of energy.
- Respond to Assembly Bill 32, the Global Warming Solutions Act of 2006, which mandates that California must reduce its greenhouse gas emissions to 1990 levels by 2020.

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- Pursue California energy policy that energy efficiency is the resource of first choice for meeting California's energy needs.
- Act on the findings of California's Integrated Energy Policy Report (IEPR) that Standards are the most cost effective means to achieve energy efficiency, expects the Building Energy Efficiency Standards to continue to be upgraded over time to reduce electricity and peak demand, and recognizes the role of the Standards in reducing energy related to meeting California's water needs and in reducing greenhouse gas emissions.
- Meet the West Coast Governors' Global Warming Initiative commitment to include aggressive energy efficiency measures into updates of state building codes.
- Meet the Executive Order in the Green Building Initiative to improve energy efficiency of nonresidential buildings through aggressive standards.

Standards will be amended by 2014.

CalGreen (Part 11 of the 2010 Title 24 Building Standards Code is the California Green Building Standards Code)

The California State Legislature passed CalGreen in 2010 with an effective date of January 1, 2011. CalGreen is the first mandatory statewide green building code in the United States. CalGreen applies to all residential, commercial, hospital and school buildings. It requires waste and water reductions, energy inspections, and use of low pollutant emitting interior materials, and establishes a 75 percent waste material diversion goal for the State of California.

Appliance Energy Efficiency Regulation

California Appliance Efficiency Regulations address 21 categories of Federally-regulated and non-Federally regulated appliances that range from air condensing units to exit signs. Title 20

reduces emissions intensity of new and existing buildings by establishing performance standards for devices often used in buildings and, in some cases, public infrastructure.

California Public Utilities Commission Energy Efficiency Strategic Plan

~~This~~The Strategic Plan describes a series of measures to improve energy efficiency and to address a variety of energy and emissions-related issues. Two important goals of the Strategic Plan are zero net energy residential buildings by 2020 and zero net energy commercial buildings by 2030, which would reduce emissions associated with new buildings.

Renewable Portfolio Standard

This Standard requires a minimum 20 percent of California's electricity be provided from clean, carbon-free sources including solar, wind, biomass and small hydropower by 2020. Implementation of the Renewable Portfolio Standard will reduce emissions intensity of purchased electricity and reduce emissions associated with buildings and infrastructure.

Executive Order S-3-05

Prior to signing AB 32, Governor Schwarzenegger issued Executive Order S-3-05, which provides an additional, long-term greenhouse gas emissions reduction target of 80 percent below 1990 levels by 2050. Governor Arnold Schwarzenegger issued an Executive Order seeking a more aggressive non-binding target of 33 percent renewable energy by 2020.

Executive Order S-1-07 – Low Carbon Fuel Standard

California's Low Carbon Fuel Standard requires an approximate 10 percent reduction in carbon intensity of California motor fuels. This is the first standard to examine specifically carbon content of transportation related fuels. The Fuel Standard also is recognized as a "discrete early

action item" by the California Air Resources Board in its Scoping Plan.

~~CalGreen (Part 11 of the 2010 Title 24 Building Standards Code is the California Green Building Standards Code)~~

~~The California State Legislature passed CalGreen in 2010 with an effective date of January 1, 2011.~~

~~CalGreen is the first mandatory statewide green building code in the United States. CalGreen applies to all residential, commercial, hospital and school buildings. It requires waste and water reductions, energy inspections, and use of low pollutant emitting interior materials, and establishes a 75 percent waste material diversion goal for the State of California.~~

Regulatory Compliance

The City of Aliso Viejo ~~is a modern City. It~~ was incorporated in 2001. The majority of the City was constructed between 1990 & 2005. Aliso Viejo is a master planned City benefitting from planning principles designed to balance jobs and with housing, provide retail, commercial and municipal services within close proximity to residential areas with a safe and efficient circulation system designed to meet the Cities needs. These planning principles help reduce the Cities energy use and its greenhouse gas footprint. ~~The City of Aliso Viejo is currently in compliance with all regulations.~~

The City of Aliso Viejo is currently in compliance with all regulations. An overview of the City's compliance with current key regulations is provided below. The following Chapter provides the City's Greenhouse Gas Inventory and Forecasts which provide the basis for the determination of regulatory compliance.

AB-32 Compliance

Assembly Bill 32 commits the State to reduce greenhouse gas emissions in California to 1990 levels by 2020 and to 80 percent below 1990 levels by 2050.

The California Air Resources Board (CARB or Board) is the lead agency for implementing AB 32. CARB met the first milestones in 2007, by developing a list of discrete early actions to begin reducing greenhouse gas emissions, assembling an inventory of historic emissions, establishing greenhouse gas emission reporting requirements, and setting the 2020 emissions limit.

AB 32 requires the CARB to develop a Scoping Plan outlining the State's strategy to achieve the 2020 greenhouse gas emissions limit. ARB adopted a Scoping Plan in 2008. The Scoping Plan proposes a comprehensive set of actions designed to reduce overall greenhouse gas emissions in California, improve our environment, reduce our dependence on oil, diversify our energy sources, save energy, create new jobs, and enhance public health. CARB adopted the Scoping Plan in 2008.

AB 32 Scoping Plan Reduction Goals

Reducing greenhouse gas emissions to 1990 levels means cutting approximately 30 percent from business-as-usual emission levels projected for 2020, or about 15 percent from today's levels. On a per-capita basis, that means reducing our annual emissions of 14 metric tons of carbon dioxide equivalent (CO₂(e)) for every man, woman and child in California down to about 10 metric tons of CO₂(e) per capita by 2020.

According to the City's Greenhouse Gas Inventory² for base year 2008, City-wide greenhouse gas emissions from all sectors collectively were about 7.1 metric tons of CO₂(e) per capita which is well below the 10± metric tons per capita target set by the AB 32 Scoping Plan for 2020.

Growth projections used to forecast development conditions upon build-out of the Aliso Viejo General Plan³ include population growth (10±%), and build-out of the remaining undeveloped parcels within the City (8±%). Upon build-out of the General Plan in 2024, the City conservatively projects greenhouse gas emissions will be about 8.4 metric tons of CO₂(e) per capita, well below the 10± metric

² Refer to Appendix E

³ Approximately 18%

tons of CO2(e) per capita target set by the AB 32 Scoping Plan for 2020.

Executive Order S-3-05

California Executive Order S-3-05 (an 80 percent reduction from 1990 levels by 2050). The City of Aliso Viejo is well on track to meet Executive Order S-3-05. ~~The City of Aliso Viejo is approximately~~

The Green City Initiative contains voluntary initiatives and measures that would further reduce the City's carbon footprint.

Senate Bill 97

The City of Aliso Viejo Complies with SB 97 and The California Environmental Quality Act by including analysis of climate change impacts in its environmental review of projects.

The California Environmental Quality Act (CEQA) Guidelines allow public agencies to analyze and mitigate greenhouse gas emissions in a plan for the reduction of greenhouse gas emissions (14 C.C.R. Section 15183.5). When a lead agency elects to adopt such a plan, the plan should include, among other things, "measures or a group of measures, including performance standards that substantial evidence demonstrates, if implemented on a project-by-project basis, would collectively achieve the specified emissions level."

However, if there is substantial evidence that ~~the~~ effects of a particular project may be cumulatively considerable notwithstanding ~~the~~ project's compliance with the specified requirements in the Green City Initiative an Environmental Impact Report must be prepared for the project. ~~As the City is 95% built-out, it~~ is likely that the Green City Initiative will provide adequate framework for analyzing Greenhouse Gas impacts for the

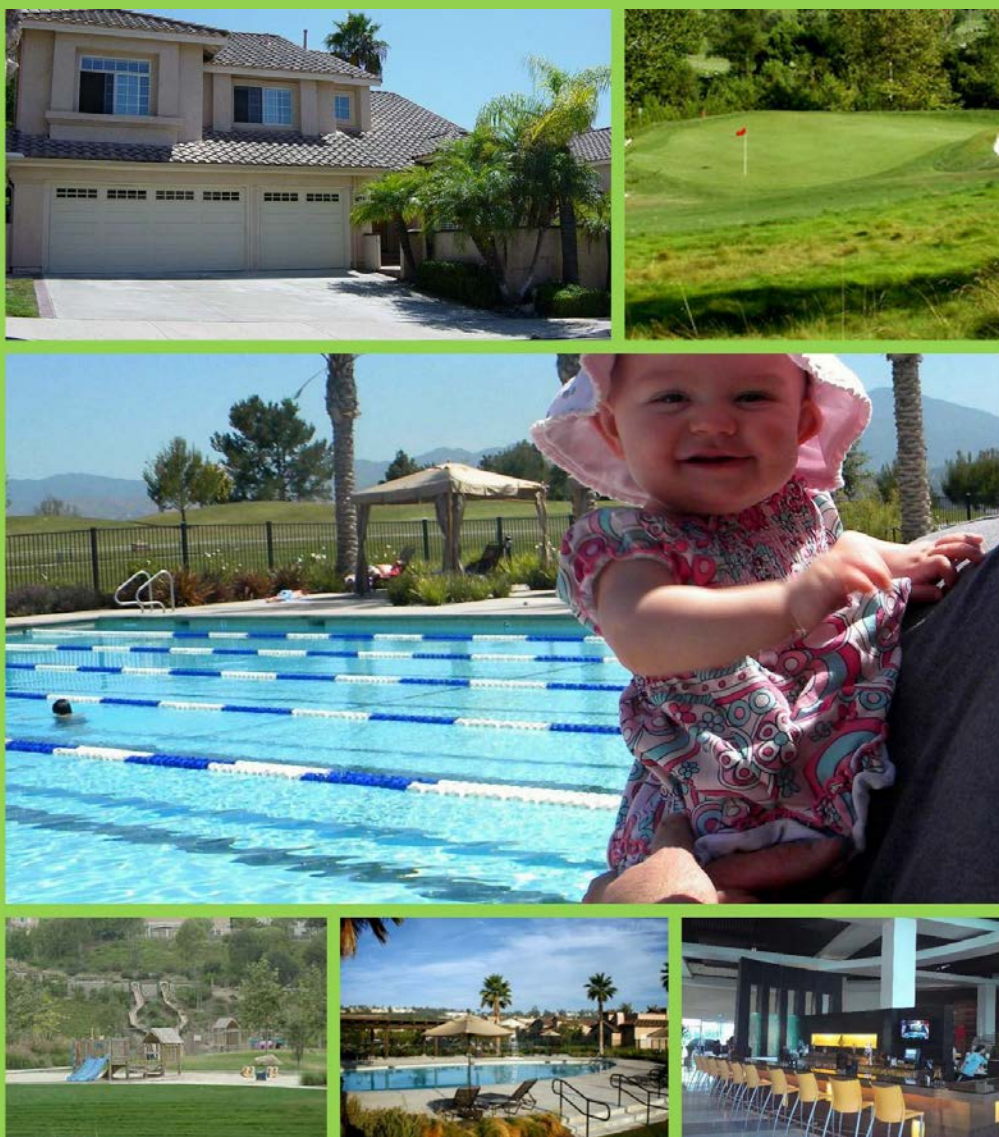
foreseeable future because Aliso Viejo is 95% built-out.

Assembly Bill 1358

The City of Aliso Viejo provides a circulation system that meets the needs of all users of the roadway including pedestrians, bicyclists, public transit riders, motorists, children, the elderly, and the disabled. This bill has no impact on the City's compliance with AB 32. However, synergies may exist with SB 375 for local and regional transportation planning. The City of is in the process of updating its General Plan. Throughout this comprehensive update, the City will investigate additional way to improve its circulation system to improve its ability to meet the needs of all users.

Title 24 Building Energy Efficiency Standards and the CalGreen State Building Code

The City requires compliance with Title 24 Building Energy Efficiency Standards and the CalGreen State Building Code. Compliance with these standards and codes will enable the City to continue to reduce its energy usage/greenhouse gas footprint and comply with Senate and Assembly bills requiring source reduction over the years to come.



CITY GREENHOUSE GAS EMISSIONS INVENTORY AND FORECAST

City Greenhouse Gas Emissions Inventory and Forecast

A Greenhouse Gas Emissions inventory is the starting point in developing a long-term plan to reduce the City's carbon footprint. The inventory identifies current contributions of various sources of greenhouse gas emissions within the City and provides the baseline for analysis to determine conformance with the state legislation including the Global Warming Solutions Act of 2006 (AB 32).

Staff developed inventories for the Aliso Viejo community and local government operations, and categorized each inventory into emissions sectors. An emissions sector is a distinct subset of a market, society, industry, or economy whose components share similar characteristics. Staff compiled the 2008 inventory for the following emission sectors: energy consumption (electricity and natural gas use), on-road transportation, solid waste, and water use and wastewater treatment. For non-transportation sectors, utility providers were able to provide consumption data for the 92656 zip code. For the transportation sector, default trip generation rates as a function of land use were used to quantify trip-related greenhouse gas emissions. The City has no direct control of city-wide greenhouse gas emissions except for those related to government operations, which can be considered a subset of the communitywide emissions inventory. A municipal inventory typically comprises a small fraction of a communitywide inventory.

This inventory focuses on the three greenhouse gases most relevant to communitywide and municipal operations: carbon dioxide (CO₂), methane (CH₄), and nitrous oxide (N₂O). Non-CO₂ emissions comprise a very small percentage of the greenhouse gas burden. However, converting emissions of all non-CO₂ gases to units of CO₂(e) allows greenhouse gases to be compared on a common basis (i.e. on the ability

of each greenhouse gas to trap heat in the atmosphere). Non-CO₂ gases are converted to CO₂e using internationally recognized global warming potential (GWP) factors. GWP factors were developed by the Intergovernmental Panel on Climate Change (IPCC) in its Third Assessment Report (TAR) to represent the heat-trapping ability of each greenhouse gas relative to that of CO₂. For example, the GWP of CH₄ is 21 because one metric ton of CH₄ has 21 times more ability to trap heat in the atmosphere than one metric ton of CO₂, on a 100-year timescale. The GWP of N₂O is approximately 310.

Baseline Year

Reporting greenhouse gas inventories on a calendar year basis is a standard practice; the United Nations Framework Convention on Climate Change (UNFCCC), the Kyoto Protocol, the European Union Emission Trading System (EU ETS), The California Climate Action Registry (CCAR), The Climate Action Reserve, and the State of California's mandatory reporting regulation under AB 32 all require greenhouse gas inventories to be tracked and reported on a calendar year basis. Aliso Viejo community and municipal inventories were prepared for the year 2008 because utility data was most readily available for 2008.

Inventory Approach

Currently, there is no standard community emissions protocol. That said, community-wide greenhouse gas emissions inventories in California are completed using the industry standard methodology found in Local Government Operation Protocol (LGOP) and the Association of Environmental Professionals (AEP) white paper on community-wide inventories. The LGOP is based on the International Greenhouse Gas Emissions Analysis Protocol

(IEAP), IPCC guidance, case law, best practices, and the California regulatory context.

The Aliso Viejo Greenhouse Gas Inventory conforms to the protocols of the LGOP in overall approach, methodology, baseline year determination, sector inclusion, and emission factors and is thus consistent with industry best practices and regulatory context.

The boundary for defining community emissions is generally the physical geographic boundary of the community. The community inventory therefore includes governmental, residential, industrial and commercial activities. While the geographic definition of a community's boundary works well for direct emissions (i.e. greenhouse gases emitted from within City boundaries), indirect source emissions produced outside City boundaries (such as those resulting from imported electricity and water) and mobile source emissions are more challenging.

The approach for this inventory was to determine baseline land use characteristics of Aliso Viejo, and then combine them with known greenhouse emission factors. For non-transportation sources, utility consumption could be divided by land use statistics to establish a precisely calibrated consumption/emissions factor. For transportation-related emissions, trip generation and trip-length default assumptions were applied to residential and non-residential land uses.

Methodology

City staff collected data from various sources, including City departments, public utilities, and private entities that provide services to and within the community. Data collection included activities specific to municipal operations (e.g. local government energy use, vehicle fuel use/mileage, water use, and solid waste disposal) and communitywide activities (e.g., total citywide energy use, vehicle miles traveled (VMT), solid

waste disposal, water use, and wastewater generation) that occurred in 2008.

The City used emissions factors recommended by the California Climate Action Registry (CCAR), the California Energy Commission (CEC), the US Environmental Protection Agency (EPA), and the California Air Resources Board (CARB) among others, to estimate CO₂(e) emissions for municipal operations and communitywide activities. Emission factors are continually being refined and improved to reflect better measurement technology and research.

Energy Consumption – Electricity and Natural Gas

The energy consumption sector includes electricity and natural gas use by residential, commercial, and industrial establishments within the legal boundaries of the City. Although emissions associated with electricity production are likely to occur in a different jurisdiction, consumers are considered accountable for generation of those emissions. Electricity-related GHG emissions are considered indirect emissions. Indirect emissions are those generated as a result of activities occurring within the jurisdiction, but are released in different geographic areas. For example, a (City) resident may consume electricity within the City, but the electricity may be generated in a different region. Direct emissions are those occurring where generated (e.g., natural gas combustion for heating or cooling). Electrical energy in Aliso Viejo is provided primarily by Southern California Edison (SCE) with a very small fraction provided by San Diego Gas & Electric (SDG&E). SCE and SDG&E staffs provided total electrical consumption for City-wide land uses as follows:

(Residential)
108,264,985 KWH (18,047 DU) = 5,999 KWH/DU

(Non-Residential)
132,394,993 KWH (11,805,564 KSF) =
11.21 KWH/KSF

Both residential and non-residential consumption factors are consistent with default factors used in various greenhouse gas guidance documents. The City of Aliso Viejo is neither an "energy hog" nor an "energy miser" in comparison with similar Southern California communities.

Natural gas consumption as a function of land use was similarly evaluated from SDG&E consumption data for 2008 for the 92656 ZIP code. In 2008, SDG&E residential customers used approximately 5 million therms of natural gas. Non-residential customers used an additional 300,000 therms for hot-water, space heating and commercial cooking. Annual baseline consumption data was as follows:

(Residential)
5,337,041 therms (18,047 DU) =
295.7 therms/DU

(Non-Residential)
304,608 therms (11,805,564 KSF) =
0.025 therms/KSF

Residential consumption of approximately 2,400 cubic feet per dwelling unit is generally lower than historical default data for the region. Non-residential consumption is substantially lower than historical data. Natural gas consumption is a lower contributor to City-wide greenhouse gas burden than estimated from default land-use assumptions.

Quantified Greenhouse Gas Emissions by Sector (2008)

Transportation

The transportation sector includes operation of on-road vehicles. Greenhouse gas emissions from mobile combustion can be estimated based on vehicle fuel use and/or miles traveled data using vehicle miles traveled (VMT)-specific emission factors from EMFAC 2007. CO₂ emissions, which account for the majority of emissions from mobile sources, are directly related to types and quantities of fuel combusted and thus can be calculated using fuel consumption data. CH₄ and N₂O emissions are more dependent on vehicular emissions control technologies and distance traveled. Calculation of CH₄ and N₂O emissions requires data on vehicle characteristics (which takes into account emission control technologies) and VMT. As with other greenhouse gas sources, the non-CO₂ contribution is relatively small.

Community-wide trip generation was estimated by combining trip generation data from 18,047 dwelling units and 11,805,564 square feet of non-residential development existing in the City of Aliso Viejo in 2008. Based upon utility consumption data, the residential mix was assumed to be approximately two-thirds single family and one-third multiple family units. City residents traveling to work, shop and other destinations drive part of the time on city streets and part of the time outside City limits. Workers and shoppers and people from other communities spend part of their time on city streets if they have Aliso Viejo destinations. Pass-through traffic may have neither its origin nor destination in the city. It was assumed city resident travel outside Aliso Viejo approximately balances non-residential travel within the city. Home-based trip origins therefore were used to estimate the city contribution to transportation-related GHG emissions.

Emissions factors for the transportation sector were obtained using ARB's vehicle emissions model, EMFAC2007. EMFAC2007 is a mobile source emissions model for California that provides vehicle emission factors by pollutant, county, vehicle class, and mode of operation. For the 2008 mobile emissions inventory, VMT and CO₂ emissions factors from EMFAC (for the Orange County fleet mix) were used for the communitywide inventory as generated by the URBEMIS2007 computer model.

The URBEMIS2007 model calculates that 18,047 dwelling units in 2008 in Aliso Viejo generated 156,564 daily trips. Annual CO₂ emissions from transportation are reported by the computer model to be 197,827 "short" tons, which equates to 179,843 metric tons of CO₂. The Bay Area greenhouse gas computer model recommends a CO₂(e) conversion factor of 1.05 to account for non-CO₂ greenhouse gases emitted by automobiles. The resulting annual inventory in 2008 was 188,835 metric tons of CO₂(e) emissions.

Solid Waste

The solid waste sector includes emissions associated with collection, processing and disposal of solid waste. Fugitive CH₄ emissions are released from solid waste facilities; that is, from landfills that accept organic waste. Emissions generated from solid waste disposal are primarily CO₂, which occur under aerobic conditions, and CH₄, which are generated under anaerobic conditions. Biogenic CO₂ emissions are considered part of the short-term carbon cycle, and are typically not included in greenhouse gas emissions inventories.

The City waste haul contractor (CR&R) provided community and government-generated solid waste data. CR&R collection data for 2008 showed 10,497 tons of collected solid waste from residential customers and 7,015 tons of commercial refuse land filled in 2008. These

values are considerably lower than default values historically assumed for municipal refuse. Recycling has reduced the level of material disposed in landfills compared to historical levels.

Greenhouse gas emissions associated with solid waste collected from the community and local government were estimated using the Environmental Protection Agency Waste Reduction Model (WARM) model and waste characteristics from the California Department of Resources Recycling and Recovery (Cal Recycle).

The Environmental Protection Agency WARM computer model states each ton of land filled material will produce 0.58 tons of greenhouse gas emissions independent of biogenic greenhouse gas production. This factor is premised upon disposal at landfills with the operational landfill gas (LFG) control systems. Refuse from Aliso Viejo is disposed in landfills with such control systems. Total annual disposal of 17,512 tons of non-recycled trash (about 1.3 pounds per resident per day and around 2.3 pounds per employee per workday) generated 10,160 metric tons of CO₂(e) emissions in 2008.

Water Consumption

The water sector includes emissions from energy associated with water treatment, distribution, and conveyance of water to Aliso Viejo as well as wastewater treatment and discharge. The California Energy Commission (CEC) has published water-energy intensity reports that provide estimates of energy required for conveyance, treatment, and distribution of water and for treatment and discharge of wastewater. Many communities of Southern California must import their water supplies hundreds of miles from remote locations via the Colorado River and Northern California canals and pipelines. Conveyance and distribution of water from these remote locations involves a high electricity demand factor for city water imports.

In addition, all water is treated to be potable, but water used in outdoor activities, such as landscape irrigation, is not subject to wastewater treatment. Therefore energy demand associated with wastewater treatment is not included in outdoor water consumption estimates. An average emissions factor from the CEC was used to account for both indoor and outdoor water uses.

The Moulton Niguel Water District is the primary provider of water service to Aliso Viejo. The El Toro Water District provides a very small contribution to the Aliso Viejo water supply. Annual citywide consumption totals approximately 3.0 billion gallons. The California Energy Commission has developed electrical consumption estimates for both the potable and not-potable fractions of water consumption in Southern California. As a first approximation, consumption was assumed equally split between indoor uses versus outdoor uses.

Water resource consumption depends upon end use. Irrigation and decorative water features use somewhat less energy because they do not require additional subsequent wastewater treatment. However, because so much of Southern California water consumption requires long-distance and energy intensive transport, the greenhouse gas emissions difference between "outdoor" versus "indoor" use is relatively small. Water District records show an annual consumption of 2.9 billion gallons in 2008. For an assumed 50/50 split in water use, the CEC consumption factor for Southern California is almost exactly 4.0 metric tons of electrical energy GHG emissions per million gallons of delivered water. Application of this factor to the 2008 consumption data in Aliso Viejo predicts an annual GHG contribution of 11,580 metric tons in the baseline year.

Electricity

Combined residential and non-residential electrical consumption in Aliso Viejo was 240,660

mega-watt hours (MWH) in 2008. The California Climate Action Registry (CCAR) states each MWH used in California generated 0.331 metric tons of CO₂(e). Consumption of electricity thereby contributed 79,660 metric tons of CO₂(e) to the city-wide inventory.

Natural Gas

SDG&E reports that 5.64 million therms of natural gas were consumed in 2008 within the 92656 ZIP code. At an average of 96.7 cubic feet per therm, annual consumption was 545.6 million cubic feet. The CCAR conversion factor from consumption to CO₂(e) emissions is 54.6 metric tons per million cubic feet. The natural gas consumption contribution to the Aliso Viejo baseline emissions inventory was 29,790 metric tons per year.

Total

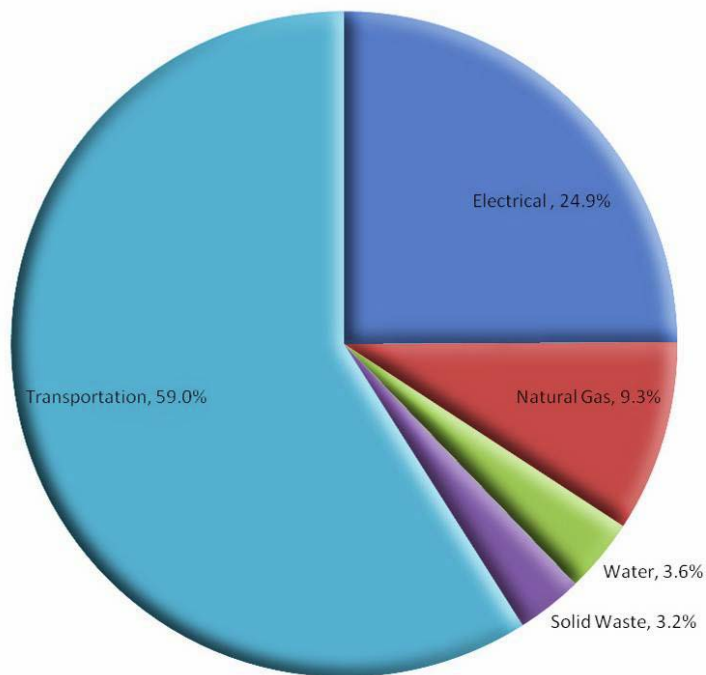
Aliso Viejo's relative contribution to various emissions sectors are shown in Figure 1. With 45,173 residents in Aliso Viejo in 2008, per capita greenhouse emissions were 7.1 metric tons of CO₂(e). ***This level is substantially below the statewide per capita target for year 2020 of approximately 10 metric tons per year.***

Transportation is seen to be the most dominant contribution to the City's carbon footprint as indicated in Table 1:

Table 1
Aliso Viejo 2008 Communitywide GHG Emissions

	MT CO ₂ (e)	%
Transportation	188,835	59.0
Energy	79,660	24.9
Natural Gas	29,790	9.3
Solid Waste	10,160	3.2
Water Resources	11,580	3.6
Total	320,025	100%

Figure 1
2008 Communitywide GHG Inventory



Aliso Viejo will likely be able to achieve the largest, most cost-effective emissions reductions through VMT reduction and energy conservation-related greenhouse gas reduction measures. Thus, VMT reduction and energy conservation will be strong focus areas within the Green City Initiative and the Aliso Viejo General Plan.

With 45,173 residents in Aliso Viejo in 2008, per capita greenhouse emissions were 7.1 metric tons of CO₂(e)/capita. This calculation is provided below.

Total 2008 Communitywide GHG Emissions /
2008 Population

$$\begin{aligned} & 320,025 \pm \text{MT of CO}_2(\text{e}) / 45,173 \\ & = \\ & 7.08 \pm \text{MT of CO}_2(\text{e})/\text{capita rounded to 7.1} \end{aligned}$$

The City's communitywide greenhouse gas emissions from all sectors is roughly half of the existing Statewide average of 14± MT CO₂(e)/capita contained in the AB 32 Scoping Plan and well below the 10± metric tons per capita target set by the AB 32 Scoping Plan for 2020.

The City-wide contribution to this cumulative impact (approximate 7.1 to 8.4 (CO₂(e) per capita between 2008 and General Plan Build-out in 2024, is well below the 10± metric tons per capita target set by the AB 32 Scoping Plan for 2020.

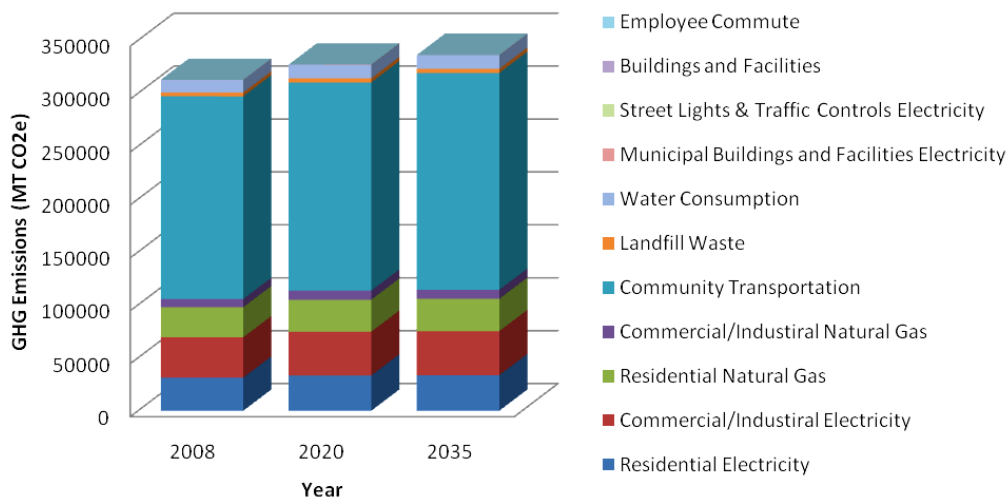
Growth projections used in the Aliso Viejo General Plan, included population growth and build-out of the remaining undeveloped parcels in the City. Based on General Plan projected build-out date of 2024, the City conservatively projects greenhouse gas emissions will be about

8.4 metric tons of CO₂(e) per capita. This calculation is provided below.

2008 CO₂(e)/capita X Projected City Growth thru General Plan Build-out (2024) = Projected 2024 City CO₂(e)/capita
 (7.1± MT CO₂(e)/capita X 18% growth = 8.378± MT CO₂(e)/capita rounded to 8.4)

Projected 2024 City-wide emissions totaling 8.4± MT CO₂(e)/capita is well below the 10± metric tons of CO₂(e) per capita target set by the AB 32 Scoping Plan for 2020. Therefore, the City is in compliance with AB 32.

Aliso Viejo Forecast Summary



Municipal Operations

The City of Aliso Viejo contracts a substantial portion of its municipal operations to outside resources. The municipal contribution to the total greenhouse gas inventory is necessarily small, which limits the possibility of locally-sponsored initiatives to measurably reduce the City contribution to the overall greenhouse gas burden. For purposes of analysis it was assumed municipal operations (City Hall, the Family Resource Center, the Conference Center and the Aquatic Center) generate greenhouse gases in direct proportion to all other non-residential uses in the City. City facilities encompass 44,000 square feet of the total citywide non-residential 11.805 million square feet of development. The resulting 0.37 percent of the total translates into the following municipal greenhouse gas allocation (metric tons per year) shown on Table 2.

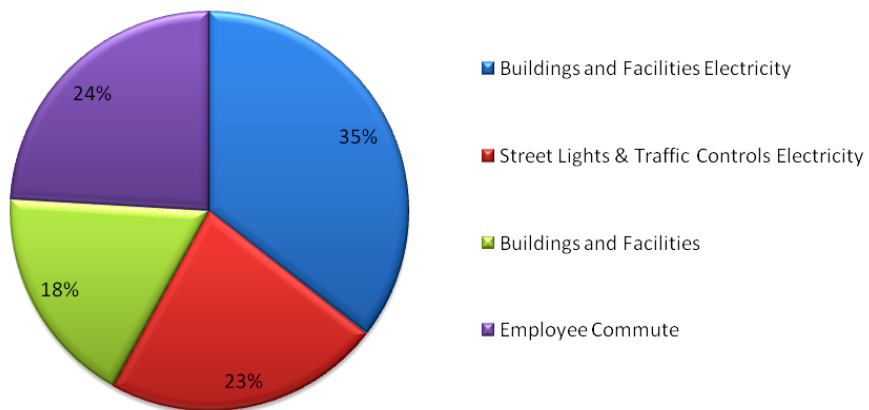
Table 2
Municipal Greenhouse Gas Allocation

Transportation	699
Energy	162
Natural Gas	6
Solid Waste	15
Water Resources	26
Total	908

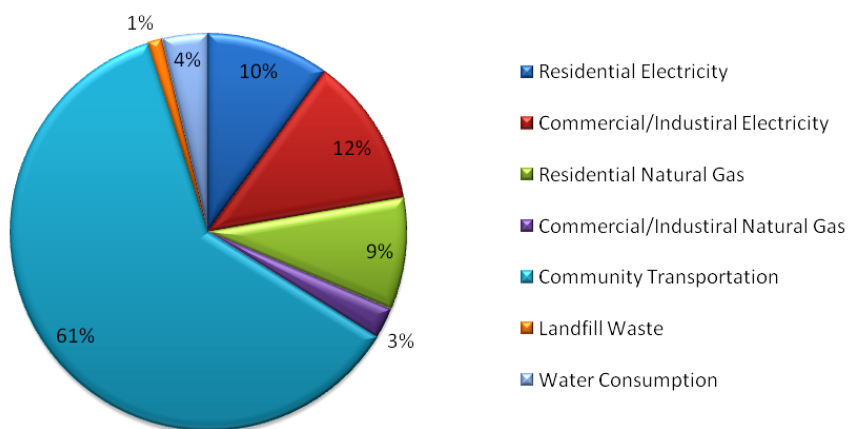
Municipal Share of City-Wide Total 0.28%

With such a small carbon footprint, municipal operations provide a very limited opportunity for effective greenhouse gas emissions reductions. The municipal role in the process therefore is more a function of leadership and example than actual mitigation.

Baseline 2008 Municipal Emissions



Baseline 2008 Community Emissions





COMMUNITY OUTREACH

Public Workshops

The viability and effectiveness of the Green City Initiative require strong community support and involvement in initiative (goal) identification and elaboration, determination of measures to lessen greenhouse gas emissions. Community outreach for the Green City Initiative assumed several forms, including establishing a Green City Initiative Web site linked through the City Web site, social media, Public Workshops, and presentations to business organizations, media reporters, educational groups and AVCA.



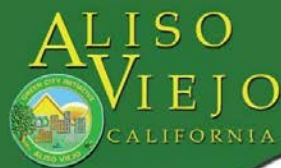
Staff conducted 12 Public Workshops pertaining to the Green City Initiative. More than 110 people attended one or more Public Workshops and offered valuable comments to the Green City Initiative process and document. The initial series (Winter/Spring, 2010/2011) addressed Water and Energy Conservation, Vehicle Management and Transportation, Waste Management and Recycling, and Land Use; that is, the topics addressed in the Green City Initiative Plan. The initial series of Workshops focused on developing initiatives (i.e., goals) based on the noted topics. The Fall/Winter, 2011/2012 series of Public Workshops continued to focus on the noted topics, but were intended to develop and discuss Implementation Measures linked to each identified Initiative.

The Initiatives (policy statements) and Implementation Measures (paths to realizing Initiatives) were placed on a series of poster boards, depicted on the following pages.

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GREEN INITIATIVE

CITY OF ALISO VIEJO GREEN INITIATIVE

- Green City Plan
- Energy
- Water
- Vehicle Management
- Transportation
- Recycling/Waste Management
- Land Use



CITY OF ALISO VIEJO'S GREEN HERITAGE

- A Planned and Balanced Community
- Commitment to Greener Living
- Enhance Existing Programs

QUALITY OF LIFE

- Foster Healthy Living
- Share in City's Benefits
- Build Community Programs
- Family Participation
- Cleaner Environment
- Protect Future Generations
- Air and Water Quality

GOOD BUSINESS SENSE

- Support and Encourage Businesses
- Enhance Real Estate Values
- Enable Potential Grants and Stimulus Money
- Attract New Businesses and Residents
- Reduce Overhead
- Installation Incentives

SAVINGS IN RESOURCE COSTS

POWER • FUEL • FUEL

- Conservation
- Efficiency
- Independence
- Recycling
- Re-Use

STATE LEGISLATION AND GREENHOUSE GASES

- Consistency with AB 32
- Consistency with SB 375
- Consistency with SB 97
- Avoid Legal Challenges

*For More Information,
Please Contact:*

greencityinfo@cityofaliso Viejo.com
(949) 425-2565 (voice message only)
<http://cityofaliso Viejo.com/greencityinfo>

CONSUMER TREND

- Desirable Lifestyle
- National Interest
- Mainstream
- Investments

EDUCATION FOR A BETTER FUTURE

- Families
- Consumers
- Businesses
- Homeowners
- Schools

With new technologies, vehicles, and new products.

FORMA . EARS . GIROUX & ASSOCIATES . AECOM . SYMBIOTIC ENGINEERING



ALISO VIEJO GREEN INITIATIVE

What Can We Do?

ENERGY

- Energy is created from many sources – some clean, some effective and others, not.
- Carbon-based fuels are the primary problem in creating energy – it's expensive, limited, unsteady, and old technology.
- We even find the need to search globally for these limited resources – this gets us into trouble and costs a fortune.



National Goal

- Our national legislators goal must be to get energy independent.
- Usually, we can save a considerable amount of money by attending to conservation in all sectors – home, transportation, manufacturing, lighting, water distribution, etc.
- GED structure use is universally accepted way to measure the impact of any energy efficiency. It is complicated, intense, but it's proven to be a valid tool.



Saving Energy Saves Water. . .

Green Initiatives – Energy

- The City should set goals for energy reduction. Our experts suggest that a 30% to 50% reduction by City operations could be accomplished.
- A comprehensive audit of current conditions should be requested.
- All City Departments should submit Energy Management Plans to meet targeted goals.
- A City Employee Incentive Program can reduce energy usage.



Energy-Saving Vehicles

- Vehicles used for City purposes will be phased to low consumption and alternative-energy power trains.
- Parking lots will be prioritized for energy-saving vehicles.



City Monitoring Program

- The City will consider an energy monitoring system to highlight where consumption is an issue – and how conservation is progressing.
- The City will post a visible thermometer billboard that shows conservation progress throughout the City.



Home Manual

- The City – in concert with SCE – will publish a "Home and Business Owner" manual on reducing energy consumption and focusing on cost-savings.
- Encourage rebate program.
- The City will mass mail the manual.



Green Initiative Team

- The City will recruit a "Green Initiative" Team for on-going upgrades to City activities.



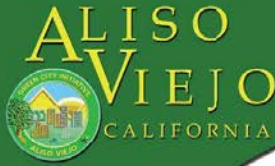
School Involvement

- The City will encourage all local schools prepare a technical paper – by students – that expresses some new green initiatives to be published on WEB site.
- Schools could have a contest as to which facility saves the most energy.



For More Information, Please Contact:
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GREEN INITIATIVE

WATER

- The two big issues with water are:
I) Quality of what we have and
II) Quantity of a limited supply.
- Many water quality initiatives are in place, but we can always do more.
- With our limited resources, we recommend concentrating on water conservation for reuse (but not all of the implementation for the Green City Initiative).



Save Water - Build Green

- Water conservation is a must do for everyone. This resource will continue to be depleted for physical, political, and energy reasons.
- AND, because we continue to be a growing society, the demand will be increasing for a depleted supply!



Saving Water is Saving Energy

- Water will become much more expensive in the near future. Installing one low-flow fixture can save 20,000 gallons a year!
- Saving energy saves water — water is a crucial tool in energy production.
- 10% of California's total energy is consumed by water distribution.



... and Saving Water Saves Energy

What Can We Do?

Green Initiatives - Water

- As funding is available, the City should convert all of its landscape areas to a water conservation design.
- The City could consider changing its Standard Plans for landscape projects to require at least 75% low-water design.



Community Involvement

- HOA Green Committees will save money — and every development should have one.
- Adjust consumption targets.



Green Committee and Coordinator

- The City will encourage all businesses to submit Voluntary Water Management Plans to the City for review and suggestions for funding, etc.



City-wide Monitoring

- The City will consider installing a city-wide Monitoring Program to assess water consumption patterns and progress in conservation.
- The City will sponsor a series of demonstration projects that will illustrate low-water landscapes for homes and businesses.



For More Information,
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ALISO VIEJO GREEN INITIATIVE

CITY OF ALISO VIEJO, CALIFORNIA

Land Use

Land Use Initiatives

- Provide for more mixed-use in City General Plan.
- Consider appropriate locations for "urban villages."
- Provide incentives for land uses to perform closer to "zero net energy."



- City should invest in some "complete streets" demonstration projects to foster favorable land use investments.
- The City should permit "walkable commercial" locations throughout the City.
- The City should permit organic gardens anywhere they are feasible.



Land Use Can Have a Significant Impact on Quality of Life

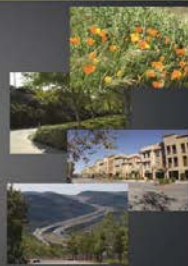
- Land use patterns change over time and as society changes.
- Travel miles and energy consumption are directly affected by land use.
- The interaction between various uses provides for different results.



- The City should permit a higher "floor area ratio" to ground coverage than is currently permitted.
- The City should attract more entertainment uses to the town center area.
- The City should encourage some additional youth recreation uses in the town center.



- Plant wildflower ecosystems in underutilized disturbed open space.
- Create more off street pedestrian pathways throughout the City.
- Create an economic development strategy for suffering districts of the City like Citywalk.
- Create a strategy to landscape Route 73 ROW.



For More Information,
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ALISO VIEJO GREEN INITIATIVE

ALISO VIEJO CALIFORNIA

TRANSPORTATION

Buses and Shuttles

- Regional, state, and federal programs control most transportation initiatives.
- The city should support good transportation planning wherever and however it can. It has traditionally been aggressive where it can.
- But, there only a few local initiatives that can be considered within our limited resources.



LOCAL INITIATIVES FOR TRANSPORTATION

- Continue to seek funding for increased and cleaner transit service in and around the city.
- Continue to seek funding for:
 - Bus shelters and dedicated stops
 - Sub regional feeder routes and services
 - Park and ride services
 - Bike racks
- Contact adjacent cities to suggest sharing in costs for a local transit system.



- Increase land use intensity around key transit hubs.
- Advertise transit options and advantages in Aliso Viejo.
- Encourage local businesses to help employees use transit.



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ALISO VIEJO GREEN INITIATIVE



VEHICLE MANAGEMENT

- There are many ways to reduce vehicle miles traveled (VMT).
- Single-person trips are a fact of our life styles and will likely not decrease.
- Reducing the dependence on carbon based fuel vehicles should be the objective.



INITIATIVES TO REDUCE VEHICLE IMPACTS

- Support a "Shop Local" campaign with tech applications, etc.
- Produce a "Complete Streets" Master Plan:
 - Bikes
 - Transit
 - NEV
 - Bicycles
 - Pedestrian
 - Biking
- Advertise "Park-Once" in Town Center



Design

- Design a demonstration project for a complete street.
- Create short cut access paths to destinations for pedestrian and NEV priority use.
- Provide NEV/bicycle priority parking spots.
- Reduce parking for vehicles in Town Center.
- Permit general stores in all zones – no required parking.



Programs

- Begin a program of increasing electric vehicle charging stations.
- Initiate a citizen discount program for NEV purchases.
- Consider roundabouts for all future feasible applications and examine candidate existing intersections for retro fit possibilities.



Programs

- Request schools set up ride sharing programs.
- Design more safe routes to schools.
- Request more police presence on school routes.



Sharing

- Build more park-n-ride locations.
- Encourage more IT centers and "hang outs" for telecommuters throughout the city.



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ALISO VIEJO GREEN INITIATIVE

ALISO VIEJO CALIFORNIA

Recycling and Waste Management

Why is this important?

- What we do not **reduce**, **reuse**, or **recycle** is left as problems for future generations.
- Many of our modern materials are not natural – they pollute nature's balance.



Recycling Initiatives

- Add note of availability for recycle racks on web site.
- City will create a resource center for comprehensive information on green initiatives.



Recycling Initiatives

- Encourage local maintenance crews to compost green waste on site.
- Create pilot projects for grey water use.
- Consider a recycling and energy recovery plant in the city.
- Encourage a sponsor (schools, garden clubs, etc.) to lead the increased use of composting, recycling, green products, etc.




Recycling Initiatives

- Create city-wide educational programs.
- City sponsor a convenient and visible e-waste transfer center.
- City should consider a green waste center to capture some composting locally.
- Publish an up-to-date list of recycling services and locations.




Waste Management Initiatives

- Publish list of waste reduction success stories to encourage popularity.
- City should subsidize a reduction in packaging used by local businesses and city facilities.
- City codes should be used to reduce construction waste and encourage recycling.
- City should encourage increase in best waste management practices by city workers.




Waste Management Initiatives

- Add bulk purchasing information to GC website.
- City should coordinate press releases on local business success stories with green initiatives.
- City should send out bulletins on how to save money with green practices.




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Public input was critical in the development of the Initiatives (goals) and Implementation Measures provided in this document. The Implementation Measures are qualitative and voluntary in nature and emphasize education over regulation. In addition to the qualitative Implementation Measures, staff has included several Implementation Measures in the document that will be quantified and, in tandem with technology-related State requirements, will result in achieving a significant reduction in City-wide greenhouse gas emissions by 2020 ~~that will exceed compliance requirements of State legislation.~~

How can residents get involved?

Many of those who attended the Public Workshop series indicated they wanted to be active in promoting conservation and sustainability in Aliso Viejo and indicated there were a variety of ways that residents can reduce their greenhouse gas emissions. The following provides some examples of potential actions:

- Use less heat and air conditioning: adjust the thermostat to a higher temperature in the summer; adjust it to a lower temperature in the winter
- Turn lights off when leaving a room and use lights only when needed
- Use compact fluorescent light bulbs because these save energy and last longer
- Clean and replace dirty filters so appliances run more efficiently
- Drive less and promote walking and bicycle use
- Keep car tires properly inflated to improve gas mileage
- Recycle, Reduce, and Reuse (for example, buy more reusable products instead of disposable ones, and make an effort to recycle properly)
- Unplug appliances when not in use
- Bring own bags to the grocery store, and shop at farmers markets when possible
- Encourage others to conserve
- Develop and promote a "Shop Local" campaign
- When mowing grass, adjust the blades higher to discourage weed and pest invasions, which translates to less need for pesticides (in addition, longer blades help to retain moisture and promote healthy roots, aiding in water conservation)
- Turn off faucets when not in use
- Learn how to compost yard trimmings instead of throwing them away
- Water plants in the early morning (the water will evaporate much more slowly, allowing you to use less)

- Club soda is a simple and natural stain remover
- Place slate stones at the base of trees to help them retain moisture (this can help save water, and may also lengthen the growing season for trees by absorbing heat during colder periods)
- Use coffee grounds (which are high in nitrogen) as a free, natural fertilizer for plants
- Crush egg shells and place them on top of soil; they naturally contain sulfur and also can be used as a fertilizer for your plants
- Pour leftover pasta water close to plant roots to fertilize them with nutrients and starch
- Use barbeque grills that run on propane or natural gas – these emit about half the carbon dioxide per hour that charcoal grills emit
- When eating outside, use reusable dishware, utensils, and cloth napkins instead of disposable paper and plastic
- Consider buying organic meats that haven't been fed antibiotics or hormones
- Baking soda can be used for abrasive scrubbing and can be combined with water, vinegar, or lemon to fizz and speed cleaning
- Distilled white vinegar can be used to disinfect and break up dirt (choose white vinegar over apple cider or red vinegars that may stain some surfaces)
- Lemon juice is a natural bleach, disinfectant, stain remover, and deodorizer
- Borax can be added to laundry to disinfect, bleach, and deodorize

Meetings with Business Groups/Schools/Publicity

In addition to the Public Workshop series, members of the Green City Initiative Working Group met with representatives of several business groups to explain the intent and vision of the Green City Initiative and to solicit comment on the Initiative process. Representatives of the Orange County Business Council (which featured the Aliso Viejo Green City Initiative in its bulletin), Orange County Chapter of the Building Industry Association, NAIOP – Commercial Real Estate Development Association, and the Orange County Association of Realtors ~~generally were supportive of the intent of the Initiative and~~ provided valuable input.

The Green City Initiative has been a subject for other organizations. The Orange County Chapter of the American Planning Association featured the Green City Initiative in its April, 2011, Newsletter. The Aliso Viejo page of Patch.com regularly featured articles about the Green City Initiative and associated Public Workshop series. Furthermore, KOCE interviewed the Director of Planning Services [and President of AVCA's Board of Director](#) about the Green City Initiative and produced the interview as part of a "Real Orange" program. Also, Planning Staff presented the Green City Initiative to the Aliso Viejo Community Association – the master homeowners association in Aliso Viejo (more than 100 sub-homeowners associations exist within Aliso Viejo), and at regional and State conferences.

Outreach to students and the educational community in Aliso Viejo was particularly important to the success of the Green City Initiative. [Soka University students played an important role in development of the Green City Initiative.](#) The Director of Planning Services and the President of the Aliso Niguel High School Energy Alliance made presentations to the Principal and faculty of Canyon Vista School. The President of the High School Energy Club has been especially involved in the Green City Initiative by serving as a liaison with student groups at the High School, Aliso Viejo Middle School, Canyon Vista Elementary School and St. Mary's and All Angels School, and supervised production of several posters students produced that advertised the Green City Initiative and supported City staff by explaining the Initiative and answering questions about the Initiative at the 2011 Aliso Viejo Founders' Day celebration.

How can businesses get involved?

There are many ways businesses can reduce their environmental impact and lower their contribution to climate change. The following list provides some ideas the community identified about where businesses can start.

- Use less heat and air conditioning; adjust the thermostats to higher temperatures in summer and lower temperatures in winter
- Use compact fluorescent light bulbs: these save energy and last longer
- Turn off electronics during off-business hours and use power strips to make this process easier
- Carpool with other employees to work, or bike and use public transportation if it is available
- Use teleconferencing and video conferencing technology to reduce work-related travel
- Purchase green products for use in office kitchens, restrooms, and work areas
- Save paper by using both sides of every page, and only print emails and documents when necessary
- Provide easily-accessible recycling containers for employees

- Consider implementing alternative work schedules for employees



CLIMATE CHANGE ADAPTATION STRATEGIES

Risks to Public Health



Climate change can result in significant risks to public health. Climate change will bring increases in frequency, intensity and duration of extreme heat events and heat waves. These changes are likely to increase risk of mortality and morbidity due to heat-related illness and exacerbation of existing chronic health conditions. The elderly, infants, those who work outdoors, the socially or economically disadvantaged, and individuals with chronic conditions such as heart and lung disease, ~~and diabetes and mental illnesses~~ are most at risk to climate-related illness. Increases in extremely high temperatures and increased ultraviolet radiation are likely to exacerbate existing air quality problems if nothing is done to reduce greenhouse gas emissions, air pollutants, and their precursors. The combination of declining air quality and higher temperatures can result in an increase in occurrence and severity of respiratory illnesses and can alter timing and/or duration of seasonal allergies. Changes in precipitation patterns affect public health primarily through potential for altered water supplies and extreme events such as droughts, wildfires and floods. Climate change likely will also result in increased extreme events. As a result, human exposure to risk of direct injury and/or mortality, respiratory illness associated with wildfires, property loss, displacement, and associated emotional distress. Increased poor air quality will increase related respiratory illnesses and communicable disease impacts.

Adaptation Measures

Adaptation strategies are intended to focus on that which is necessary to maintain quality of life

in a changing climate. The most effective adaptation strategies relate to short-term and long-term decisions. Most of these decisions are the responsibility of local community planning entities. As a result, communities with General Plans and Local Coastal Plans should begin to amend their Plans to assess climate change impacts, identify areas most vulnerable to these impacts, and develop reasonable and rational risk reduction strategies. The best long-term strategy to avoid increased health impacts associated with climate change is to ensure communities are healthy.

Adaptation Measure 1 – Identify and reassess regional climate change vulnerabilities on a regular basis and work with neighboring cities, counties and regional agencies to establish more uniform approaches to addressing climate change.

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To ~~adequately~~ stay adequately prepared, the City of Aliso Viejo must reassess its regional climate change vulnerabilities on a regular basis and modify its actions accordingly. This could be done in combination with a Green City Initiative update, which is recommended to occur every four years after adoption of the Green City Initiative. The purpose of re-evaluating community greenhouse gas emissions is to understand how reduction measures are working and to provide an opportunity to develop alternatives to reduction measures found ineffective or too expensive for emission reductions obtained from the measures. This process will allow adaptive management of the Green City Initiative and emission reduction measures leading to a more effective resolution to the challenge of climate change.

Adaptation Measure 2 – Evaluate potential climate change impacts of items being considered by the City Council.

Climate change is a serious threat to the community of Aliso Viejo. Climate change carries with it potential economic and social ramifications that could result in fiscal impacts to the City General Fund. Consistency with State of California goals pertaining to reduction of greenhouse gas emissions likely will open sources of funding Aliso Viejo could use to expand or maintain climate programs and other outreach programs. Approving programs and projects that address climate change consistent with this Green City Initiative and, ~~as a result,~~ State goals pertaining to climate change will result in more sustainable communities that provide healthier living conditions, fewer pollutants, less waste and a better quality of life for residents, business owners and visitors. These evaluations would be similar to the "fiscal impact" discussion already required in City Council reports. Climate change evaluations in discretionary decisions will guarantee the Aliso Viejo community and the City of Aliso Viejo are continually conscious of the changing environment and will keep goals and recommendations of the Green City Initiative alive and in the forefront of the decision making process.

Adaptation Measure 3 – Address barriers to change and inefficiencies within the existing structure of the City of Aliso Viejo government to be able to respond quickly to climate change developments; incorporate climate change threats to the City's existing Emergency Incident Plan and Emergency Operations Center training for City staff.

There can be inherent difficulties with communication and coordination between various City and County agencies. By identifying these inefficiencies and preparing a course of action, the City of Aliso Viejo can be better

prepared to ~~escalate-solve~~ issues throughout the City government when the need arises. A secondary benefit to improving emergency response and planning will be general improvement of emergency preparedness within the City and the community. One of the primary barriers to implementing climate change reduction measures is a lack of understanding of climate change and its importance in long-term viability of the Aliso Viejo community. Educating City staff, decision makers and the public about risks of climate change and efforts the City is taking to offset those risks will prepare the City and the community for potential climate related events and the appropriate response to those events. Incorporating climate change education into the existing Emergency Preparedness Plan and training provided to City staff should be a major component of this adaptation strategy.

Implementation of Climate Change

Adaptation Strategies

The 3 adaptation measures described above do not include a cost-benefit analysis of greenhouse gas emissions reductions because the strategies are not mandatory mitigation programs. Rather, the strategies are voluntary in nature and are designed to encourage continued commitment to existing practices that make Aliso Viejo a sustainable city. Many processes involved in adaptation efforts can be accomplished in conjunction with existing processes and would not involve substantial cost. Grant funding likely will become available in ensuing years to develop climate emergency preparedness plans and response plans in coordination with regional programs to reduce long-term risks of climate change on the Aliso Viejo community. These adaptation measures are an essential part of ensuring Aliso Viejo is proactively prepared for climate change and a way to ensure the City and community maintain awareness of climate change in its day-to-day operations.

Public Health Adaptation Strategies

The goal of Public Health Adaptation Strategies is to minimize negative health impacts of climate change.

Strategy 1: Promote Community Resilience to Reduce Vulnerability to Climate Change.

Near-Term Action: Promote Healthy Built Environments through General Plan Goals, Policies and Implementation Measures.

Near-Term Action: Identify and Reduce Health Vulnerabilities through community wide assessments to identify residences occupied by disabled persons and seniors; conduct safety, energy and water use assessments that may lead to modifying or retrofitting residences (weatherproofing, energy efficient appliances, shade covers); identify urban heat islands to increase shading and reduce heat-reflecting pavement through expansion of parks and community gardens.

Near-Term Action: Establish zoning that allows farmers markets; provide incentives for farm-to-school, farm-to-business, farm-to-consumer food production and delivery, and community and school gardens.

Long-Term Action: Promote sustainable local food systems to reduce reliance on food that requires a high number of vehicle miles traveled.

Long-Term Action: Reduce Heat Islands and increase ground cover.

Strategy 2: Educate, Empower and Engage California Citizens, Organizations and Businesses to Take Actions to Reduce Individual and Community Vulnerability to Climate Change through Mitigation and Adaptation.

Near-Term Action: Incorporate climate change and public health messages into existing education and media outreach efforts; develop diverse educational materials for diverse populations that focus on health impacts of climate change; utilize existing resources to disseminate climate related health information.

Near-Term Action: Identify dissemination networks that can reach vulnerable populations (e.g. outdoor workers and their employers, residents in urban heat islands, asthmatics, immigrants with literacy/language needs) and provide them with information on what they need to know about risks of climate change and what they can do to address risks.

Long-Term Action: Partner with local, State and federal agencies, and non-profits to develop coordinated social marketing campaigns to reduce greenhouse gas emissions and implement climate adaptation strategies; campaigns should support local efforts and empower communities to act on their own behalf to minimize health impacts of climate change.

Long-Term Action: The City of Aliso Viejo should consider hosting a Community Sustainability Fair annually, which could include Green Building and Energy Efficiency workshops, booths and exhibits, Green Library Tour, Reuse Area, Recycled Fashion Show, and Low Emission Automobile Show.

Strategy 3: Identify and Promote Mitigation and Adaptation Strategies with Public Health Co-Benefits.

Near-Term Action: Identify and prioritize community design that promotes walking and bicycling to increase physical activity and decrease motor vehicle greenhouse gas and toxic pollutants.

Strategy 4: Identify and reassess regional climate change vulnerabilities on a regular basis and work with neighboring cities, counties and regional agencies to establish more uniform approaches to addressing climate change.

Near-Term Action: New and more accurate climate change information is being developed and released frequently and regularly. The City of Aliso Viejo should reassess its regional climate change vulnerabilities on a regular basis and modify its actions accordingly. Re-evaluating Aliso Viejo's greenhouse gas emissions will enable the City to understand how greenhouse gas emissions reduction measures are working and to provide an opportunity to develop alternatives to reduction measures found ineffective or too expensive for greenhouse gas emissions reductions obtained from the measures. This will allow adaptive management of the Green City Initiative and emission reduction measures to lead to a more effective resolution to the challenge of climate change.

Strategy 5: Evaluate potential climate change impacts of items being considered by the City Council.

Near-Term Action: The City of Aliso Viejo should address barriers to change and inefficiencies within the existing Aliso Viejo city government to be able to respond quickly to climate change developments.



Strategy 6: Incorporate climate change threats into the City of Aliso Viejo existing Emergency Incident Plan and Emergency Operations Center training for City staff.

Near-Term Action: Work with the Orange County Fire Authority and the Orange County Sheriff's Office to develop a climate change threat adaptation and response plan.



GOALS FOR FUTURE ACTIONS

Goals for Future Actions

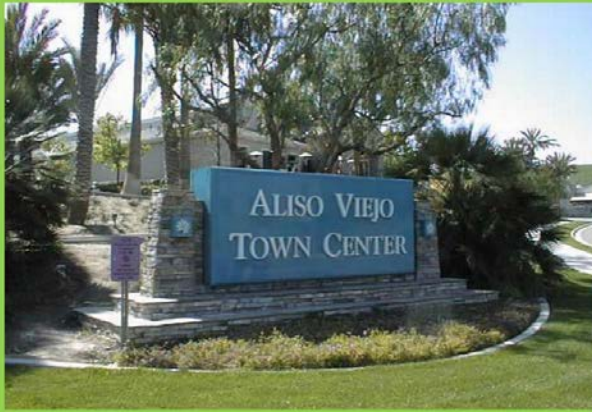
The City of Aliso Viejo is committed to a green and sustainable future for its residents, employees, businesses and visitors. The Green City Initiative reflects that commitment. Importantly, the commitment and involvement of the Aliso Viejo community is imperative to implement and grow sustainable practices. Thereby, the City will develop and enact a program of regular and continuing notices and events pertaining to the Green City Initiative.



What Aliso Viejo Will Do In The Future

In addition to continuing the Public Workshop series and as a result of community members' desires, the City will establish a program designed to encourage and grow public involvement in the Green City Initiative implementation process ~~to establish and~~ recognize valuable input of individuals, businesses and other organizations in the Initiative development and implementation processes. Some examples of potential recognition are the following.

- "Green Award" Program recognizing individuals in the Aliso Viejo community who contributed and continue to contribute to the vision, development and implementation of the Green City Initiative and to increase community awareness of the Green City Initiative Plan.
- "Green Award" Program recognizing businesses that implement conservation measures or measures identified in the Green City Initiative Plan.
- "Green Business" Education Program to educate residents, businesses and employees about climate change and green practices (e.g. strategies for waste reduction, energy efficiency, water conservation and green product purchasing) with a goal of encouraging them to reduce individual and business GHG emissions.
- Voluntary "Green Building" Certification program to encourage home retrofitting and assure homeowners they are making improvements that effectively reduce GHG emissions.
- Promote innovative renewable energy partnerships and demonstration projects.
- Encourage formation of an environmental business network to share information and promote green business strategies and best practices.
- Conduct green business workshops to help local businesses go green and to showcase local green vendors and products.
- Develop a "Shop Green" Program to increase consumer awareness about local green businesses and available green products, including where purchases can be made so consumers can easily make green purchasing choices.
- Organize and produce an Aliso Viejo "Eco Guide" that includes information from all green programs in the City and create targeted outreach materials for homeowners, residents and businesses about how to live a green lifestyle.
- Support greening of neighborhood homeowners and business associations and encourage green neighborhood programs and activities such as tree plantings, clean-ups and education.
- Establish a public education campaign promoting concepts of reduce, reuse and recycle.



INITIATIVES AND IMPLEMENTATION MEASURES

Quantifiable Measures

The Green City Initiative recommends the City consider periodically monitoring its goal to reduce energy usage, use of natural resources and generation of greenhouse gas emissions. The implementation measures below noted with a "Q" after numbering (for example: WC-1-Q) are believed intended to be quantifiable for future monitoring.

Water Conservation

Water Conservation – Indoor

Water Conservation Implementation Measure WC-1-Q: Adopt Incentive based approach through voluntary programs. The City could recommend a desired level of water conservation voluntary retrofits in the community and provides incentives for making the retrofits.

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Changes in ~~the~~ California Building Code requirements in 1980 and 1992 have reduced indoor water use in an average residential home by approximately 35 percent over the last 30 years. Water efficient conservation retrofits in existing older buildings offer an important opportunity to protect water resources and reduce greenhouse gas emissions. Some of the oldest buildings in Aliso Viejo have old toilets and faucets that use three times more water than currently available models.

Water Conservation – Landscape

Water Conservation Implementation Measure WC-2Q: Install smart irrigation controllers on municipal properties that complement plant selection to adjust irrigation in response to weather and soil moisture conditions can further reduce water use. The City would encourage installation of smart irrigation controllers and voluntary retrofits for future development on presently vacant properties.

Landscape irrigation uses approximately 40 percent of all potable water in the Los Angeles region. Designing landscapes to favor low water demand plants adapted to the local climate is one of the most cost effective measures for reducing potable water use and greenhouse gas emissions resulting from water transport.

Water Efficient Landscape Retrofits in Existing Landscapes

Water Conservation Implementation Measure WC-3Q: Encourage turf grass removal and water efficient landscaping program. The City would encourage turf grass removal and low water landscape retrofit programs to existing commercial and residential property owners through creation of a turf grass removal program and through development of targeted marketing and outreach programs to encourage property owners to use water efficient landscape design and irrigation technologies.

Turf grass is one of the most water intensive plants in a landscape. Its high water demands and frequent maintenance needs make it a resource intensive option. Reducing irrigated turf grass also will reduce greenhouse gas emissions. Planting vegetation with minimal water needs such as California

native species, choosing vegetation appropriate for the climate of the project site, and choosing complimentary plants with similar water needs can dramatically reduce landscape water demand.

Energy Conservation

Energy Performance in New Construction

Energy Conservation Implementation Measure EC-1-Q: The City should encourage new construction to implement standards that exceed Title 24 energy efficiency standards at a level comparable to GreenPoint minimum requirements, Energy Star Rated Homes, and achievement of California Green Building Code Tier 1 performance criteria.

New construction offers an opportunity to achieve high levels of energy efficiency through use of advanced materials and design. The State of California currently requires all buildings meet 2010 Title 24 energy efficiency standards. The California Energy Commission strengthens these standards every 3-5 years to increase efficiency in new buildings. Aliso Viejo has adopted Title 24 requirements.

Energy Efficient Appliances in New Residential Construction

Energy Conservation Implementation Measure EC-2-Q: The City should encourage builders to use Energy Star-rated models when installing refrigerators, dishwashers, clothes washers and ceiling fans.

In new residential buildings, builders normally supply refrigerators, dishwashers, clothes washers, and ceiling fans. Increasing the number of Energy Star-rated appliances installed in new residences would reduce energy use, greenhouse gas emissions and homeowners' long-term energy bills.

Building Shade Trees

Energy Conservation Implementation Measure EC-3-Q: Encourage and incentivize planting building shade trees in new development.

Shade trees strategically planted near buildings can reduce summer air conditioning electricity demand. Additionally, lowered air temperatures and wind speeds from increased tree cover can decrease both cooling and heating demand. Air conditioning and heating savings result in reduced greenhouse gas emissions. Energy savings can be substantial, especially in Aliso Viejo, which is home to large numbers of air conditioned buildings and long high temperature seasons.

Public Realm Lighting Efficiency

Energy Conservation Implementation Measure EC-4-Q: Encourage use of high efficiency public realm lighting. The City should encourage new commercial and industrial development to utilize high efficiency lamp technologies (e.g. light-emitting diodes lamps) to light parking lots and other public realm areas.

Public realm lighting includes streetlights, pedestrian pathway lights, area lighting for parks and parking lots, and outdoor lighting around public buildings. Lighting design and technology can considerably influence amount of electricity used to light these areas. Installing more efficient lamps would use less electricity while producing the same amount of light and while reducing greenhouse gas emissions.

Vehicle Management/Transportation

End of Trip Facilities

Vehicle Management/Transportation Implementation Measure VMT-1-Q: Investigate locations and funding for eEnd of trip facilities includes bicycle lockers, shower facilities, and changing rooms.

Research has demonstrated these facilities encourage bicycling and pedestrian travel since non-automotive commuters are provided an opportunity to travel without damaging their work clothing. This strategy [would](#) apply both to City and non-municipal employees.

Vehicle Management/Transportation Implementation Measure VMT-2-Q: Implement a Neighborhood Electric Vehicle (NEV) Network.

The City will attempt to include design of local "light" vehicle networks, such as NEV networks, as part of its design of a Complete Streets network. An NEV is classified in the California Vehicle Code as a "low speed vehicle." They are electric powered and must conform to applicable federal automobile safety standards. NEVs offer an alternative to traditional vehicle trips and can legally be used on roadways with speed limits of 35 miles per hour or less (unless specifically restricted). To create an NEV network, the City would design the necessary infrastructure, including NEV parking, charging facilities, striping, signage and educational tools. NEV routes will be designed throughout the City and may double as bicycle routes.



Vehicle Management/Transportation Implementation Measure VMT-3-Q: Provide Traffic Calming Measures. The City could design a network of traffic calming measures in selected roadways.

Providing traffic calming measures encourages people to walk or bike instead of using a vehicle. This mode shift will result in a decrease in vehicle miles traveled. Roadways could be designed to reduce motor vehicle speeds and encourage pedestrian and bicycle trips with traffic calming features. Traffic calming features may include the following: marked crosswalks; count-down signal timers; curb extensions; speed tables; raised crosswalks; raised intersections; median islands; tight corner radii; roundabouts or mini-circles; on-street parking; planter strips with street trees; and, chicanes/chokers.

Waste Management and Recycling

Waste Diversion

Waste Management and Recycling Implementation Measure WM-1-Q: Expand organic waste diversion programs.

The City should work with its contract waste hauler to develop a combined (organic waste yard trimming, food scraps, food-soiled paper) collection system and encourage residents and businesses to divert these materials from landfills and would develop a marketing campaign to educate the community and facilitate participation in this program.

Waste Management and Recycling Implementation Measure WM-2-Q: Expand Construction and Demolition (C&D) material diversion.

The City could consider adopting a policy encouraging more than 50 percent of C&D materials to be diverted from landfills. This measure may have low impact because Aliso Viejo is 95 percent built out and highly residential, but has been found to be an effective and politically feasible measure in other cities.

Initiatives and Qualitative Implementation Measures

City staff, the Green City Initiative working group, Aliso Viejo community members, Public Workshop attendees, [students](#) and representatives of the business community developed qualitative implementation measures that lay a strong foundation for improving the quality of life [health-wise and economically](#), of Aliso Viejo residents and business owners. The following Initiatives and Implementation Measures are intended to establish a voluntary path to securing a sustainable Aliso Viejo.

The following Initiatives and Implementation Measures are organized and presented according to the following topics: Water Conservation; Energy Conservation; Vehicle Management and Transportation; Waste Management and Recycling; and, Land Use. [When the word “should” is used, “should” is meant to be “should encourage voluntary action and not require mandatory action or participation.”](#)

Water Conservation

Water conservation is imperative for a sustainable city to maintain a reliable source of fresh water for daily use. Simple conservation and use of more water efficient appliances and landscaping techniques can significantly reduce water use, save money, and help ensure a reliable water supply. Responsible management of rain water runoff also is important to a sustainable city. Conservation of water can be supplemented by capturing rainwater for use rather than allowing rainwater to become runoff. Capturing rain water and urban runoff and reusing it for irrigation and other outdoor uses help reduce demand for potable water. Increasing permeability of hardscape and increasing open space helps reduce runoff by allowing rain water to percolate into the ground, thereby contributing to aquifer replenishment.

Southern California imports approximately one-half of its water from long distances via the State Water Project and the Colorado River Water Project. Significant amounts of electricity are needed to supply, convey, treat and distribute water and to treat wastewater. According to the California Energy Commission, water-related energy use consumes 19 percent of the State’s electricity, 30 percent of its natural gas, and 88 billion gallons of diesel fuel every year. The average single family property uses approximately 50 percent of its water outdoors. Water-related electricity use adds approximately 39%-55% to household energy use, exclusive of in-home water-related energy costs such as water heating or pumping. So, when a community saves water it saves energy. Therefore, Aliso Viejo residents and businesses can reduce greenhouse gas emissions by reducing water use.

Water Conservation Initiative #1: *The City should implement water conservation measures in all municipal facilities and convert all landscaping on all municipal properties to drought tolerant species as funding becomes available as examples for residents and business owners in Aliso Viejo.*

Water Conservation Implementation Measure 1-A – The City should develop and implement sustainable landscaping standards pertaining to the Aliso Viejo Ranch property to assist in guiding its future development.



Water Conservation Implementation Measure 1-B – The City should assess, maintain and repair (as necessary) and replace (as funding becomes available) existing plumbing fixtures, pipes and irrigation systems in all municipal buildings and facilities to minimize water use. Use of high water efficiency fixtures and appliances in municipal facilities is one way the City can realize significant reductions in water consumption and cost savings. Water efficient fixtures with potential for use in municipal facilities include low-flow sinks, urinals and toilets.

Water Conservation Implementation Measure 1-C – The City should retrofit existing municipal facilities as funding becomes available with low impact development mechanisms. Low impact development employs principles such as preserving and recreating natural landscape features, and minimizing effective imperviousness to create functional and appealing site drainage that treats storm water as a resource rather than as a waste product. By implementing low impact development principles and practices, water can be managed in a way that reduces impact of built areas and promotes natural movement of water within an ecosystem or watershed. The State of California has identified minimum low impact development strategies that must be integrated into new municipal facilities.

Water Conservation Implementation Measure 1-D – The City should use compost and mulch in agency landscaping as a water conservation measure.

Water Conservation Implementation Measure 1-E – The City should consider installation of rain catchment systems at municipal facilities. The City could install rain barrels or other rainwater harvesting mechanisms at municipal facilities where applicable. Rainwater harvesting is the accumulation and storing of rainwater for reuse before it reaches the aquifer. Rainwater can be collected in rain barrels or other rainwater harvesting mechanisms and used for a variety of activities, including groundwater recharge, composting, community gardens and other small scale water needs.

Water Conservation Implementation Measure 1-F – The City should install smart irrigation control systems in City-owned parks and landscaped areas, City-maintained parks, fields, landscaped areas and streetscapes. "Smart" irrigation control systems monitor water use, measures and moisture, identify plumbing leaks and prevent excessive water loss. These systems decrease water consumption by approximately 25 percent by allowing irrigation adjustments to be made remotely, reducing vehicle miles traveled to individual parks and streetscapes.

Water Conservation Implementation Measure 1-G – The City should encourage the Aliso Viejo Community Association and the other Homeowners Associations in Aliso Viejo to install smart irrigation control systems in parks and landscaped areas under its control.

Water Conservation Initiative #2: The City should consider changing its Standard Plans for landscape projects to require more than 50% of landscaping be drought tolerant in new development within Aliso Viejo.

Water Conservation Implementation Measure 2-A – The City ~~should require increased use of drought tolerant plants in new landscapes and as replacement plants for existing landscapes and should require more than 50 percent of landscaping in all new developments be drought tolerant native landscaping. In addition, the City should use compost and mulch in municipal facilities landscaping and should encourage compost and mulch use in private landscaping.~~ currently requires a minimum 50% of landscaping in new development be drought-tolerant. The City should encourage development to exceed this percentage requirement.

Water Conservation Implementation Measure 2-B – The City should develop landscape design and maintenance guidelines pertaining to suggested use of water conserving plants and irrigation techniques, including criteria for lawns and water use.

Water Conservation Initiative #3: The City should consider developing a business outreach program about water conservation to provide reduction strategies to businesses in Aliso Viejo.

Water Conservation Implementation Measure 3-A – The City should consider adopting a Retrofit Program with incentives to encourage installation of water conservation measures in existing businesses and homes.

Water Conservation Implementation Measure 3-B – The City of Aliso Viejo should work with developers and contractors ~~to establish menus and check lists~~ to encourage water efficient infrastructure and technology use in new construction that may include low-flow toilets and shower heads, and Energy Star washing machines and dishwashers, and moisture-sensing irrigation.

Water Conservation Initiative #4: The City should work with the Aliso Viejo Community Association, willing homeowners associations and the Moulton-Niguel Water District and El Toro Water District to develop and publicize measures property owners can take to reduce water consumption.

Water Conservation Implementation Measure 4-A – The City should work with Moulton Niguel Water District and El Toro Water District to expand outreach programs and incentivize water conservation

throughout Aliso Viejo and to create a program that permits and regulates residential rain water catchment systems.

Water Conservation Implementation Measure 4-B – The City should request the Moulton-Niguel and El Toro Water Districts investigate and report on the potential to increase reclaimed water supply and usage in the City.

Water Conservation Implementation Measure 4-C – The City should encourage the Aliso Viejo Community Association to reduce the amount of water used for landscape irrigation ~~by improving irrigation systems and~~ by replacing grass lawns with landscapes that are more drought tolerant, enhance the environment, require less maintenance, and reduce amount and pollution load of urban runoff.

~~**Water Conservation Implementation Measure 4-D** – The City should encourage willing homeowners' associations to use development techniques to direct rooftop runoff to pervious areas such as yards, garden beds, vegetated/soft bottom open channels, or on-site structural Best Management Practices for capture, treatment and reuse of water on proposed residential modification plans.~~

Water Conservation Implementation Measure 4-E-D – The City should encourage the Aliso Viejo Community Association to reduce energy demand associated with potable water conveyance by doing the following for property it owns or maintains.

- Implementing a landscaping palette that emphasizes drought tolerant plants and exceeds City standards for water conservation
- Limiting turf areas to no more than 20% of all landscaped areas, exclusive of athletic fields
- Using water efficient irrigation techniques that exceed City standards for water conservation
- Using United States Environmental Protection Agency Certified WaterSense labeled or equivalent faucet, high efficiency toilets and water conserving shower heads

Water Conservation Implementation Measure 4-F-E – The City should develop a program to educate the public about impact of water use on climate change and about measures citizens can take to reduce water consumption, including illustration of low-water drought tolerant landscapes for residences and businesses.

Energy Conservation

Energy use is a vital component of sustainability because greenhouse gas emissions associated with water delivery, electricity, natural gas and transportation fuel use is a primary contributor to climate change. The California State Water Project is the largest single user of energy in California. The State Water Project burns energy pumping water 2,000 feet over the Tehachapi Mountains – the highest lift of any water system in the world. The amount of energy used to deliver that water to residential customers in Southern California is equivalent to approximately one-third of the total average household electric use in the region. In addition, ninety percent of all electricity used on farms is devoted to pumping groundwater for irrigation.

Through its education efforts, the City will have a citizenry far more conversant with and demanding of energy-savings in all aspects of its built environment. Through its leadership in adopting and promoting measures to lessen impacts of climate change, [the City, Aliso Viejo](#) will become a model to other cities in south Orange County. Aliso Viejo also is taking steps to improve sustainability of its municipal operations by reducing its energy demand, eliminating its waste, increasing its energy efficiency and prompting alternative fuels and renewable energy will enable the City to significantly reduce cost to operate its facilities and to reduce its greenhouse gas emissions. Incorporating sustainable construction methods into infrastructure projects will reduce project environmental impacts and improve its surroundings.

Green buildings emit less pollution, use more environmentally friendly materials and are healthier for occupants. Buildings generate 30 percent of greenhouse gas emissions. Green buildings have smaller carbon footprints than conventional buildings. Green buildings also result in better indoor air quality and are less expensive to maintain due to reduced demand for heating, cooling and water. In California, commercial buildings account for 36 percent of the State's electricity use. Building materials account for nearly 22 percent of the waste stream going to landfills. The average green building uses 30 percent less energy (and 30-50 percent less water) than a comparable "non-green" building.

Energy Conservation Initiative #1: *The City should establish an energy reduction goal for municipal operations. The goal should be developed following a comprehensive audit of current municipal operations at City Hall, the Conference Center, the Aquatic Center, the Family Resource Center, and future development of Aliso Viejo Ranch.*

Energy Conservation Implementation Measure 1-A – The City should consider including in its municipal budgets funds for auditing all municipal facilities every five years to quantify energy use and identify opportunities for energy savings.

Energy Conservation Implementation Measure 1-B – The City should develop and maintain Energy Management Plans to establish and reach targeted energy reduction goals for municipal facilities. These Plans could include the following.

- A City Employee Incentive Program that focuses on reducing energy usage in municipal facilities

- Installation of photovoltaic systems or other renewable sources of energy on municipal facilities, replacement of fluorescent lighting fixtures with efficient light-emitting diodes
- Installation of energy efficient lighting and occupancy sensors
- Replacement of outdated HVAC systems with energy efficient models in City facilities
- Requiring all City leases and tenant improvements to follow LEED standards and energy efficiency standards and include this requirement in all City lease and rental agreements
- Installation of Energy Star appliances and energy efficient fixtures in all City facilities when equipment is due for replacement
- Establishment of energy efficiency protocols for building custodial and cleaning services
- Establishment of municipal facility energy efficiency policies that provide employees with guidelines, instructions and requirements for efficient use of municipal facilities

Energy Conservation Implementation Measure 1-C – The City should investigate ways to finance reduction of traffic signal and street lighting system energy use, which may include replacement of incandescent traffic and crosswalk lights with energy efficient light-emitting diodes and replacement of incandescent and mercury vapor street and parking lot lights with energy efficient alternatives.

Energy Conservation Implementation Measure 1-D – The City should ~~require vehicles used~~encourage use of low consumption or alternative energy vehicles for City municipal operations, ~~including those used by contract services, be low consumption or alternative energy vehicles~~ and should prioritize parking spaces for energy saving vehicles at City-owned facilities.



Energy Conservation Implementation Measure 1-E – Upon implementation of the Aliso Viejo Ranch Master Plan and Site Plan the City should perform energy efficiency upgrades at Aliso Viejo Ranch that are in compliance with Secretary of the Interior Standards for historic preservation, if applicable.

Energy Conservation Implementation Measure 1-F – The City should install occupancy sensors to administrative areas in municipal facilities. Lighting typically accounts for 30 – 50 percent of energy use in most buildings. Therefore, finding ways to increase lighting efficiency can result in significant cost savings in new and existing buildings. Sensors turn lights on when they detect someone entering a room or area and then turn lights off after sensing the room is empty. Sensors are best suited for spaces used infrequently or unpredictably such as conference rooms, private offices, storage areas and bathrooms.

Energy Conservation Implementation Measure 1-G – The City should replace all existing lighting at municipal facilities with the most efficient applicable lighting technology as funding becomes available. Fluorescent lights are the most ubiquitous indoor light source because they last long and are approximately 50 percent less expensive to run than incandescent lights. However, fluorescent lights contain mercury. High-intensity discharge lights also are extremely energy efficient, provide high light output, and have an extremely long life. A number of new, lower wattage lamps make high-intensity

discharge lights for indoor applications. LED lighting is another viable lighting alternative that has a longer operation life (approximately 100,000 hours) than the average incandescent light (5,000 hours) and also is more energy efficient.

Energy Conservation Implementation Measure 1-H – The City should install energy-efficient windows throughout municipal facilities where appropriate and feasible. Benefits of energy-efficient windows are reduced energy usage and increased cost savings. Energy efficient windows create a more comfortable work environment and result in less condensation, increased light and views, reduced fading and lower HVAC costs.

Energy Conservation Implementation Measure 1-I – The City should adopt and implement a procurement policy that establishes standards for climate-friendly products and requires agency purchases to meet standards such as the following:

- New equipment meets Energy Star or comparable energy efficiency standards
- Computer purchases meet the highest feasible EPEAT certification level
- Office paper (copy paper; printer paper; writing pads; stationery; envelopes; business cards) purchases contain a maximum specified percentage of post-consumer recycled content
- Other paper purchases (paper towels; toilet paper; napkins) contain a minimum percentage of post-consumer recycled content
- Carpeting and other furnishings contain a minimum percentage of recycled content
- Plastic items (refuse and recycling receptacles; decking; parking lot barriers; furniture) contain recycled content
- Oil and oil-related products contain recycled content
- Products certified by either GreenSeal or EcoLogo so long as they cost no more than an agency-determined percentage above the price of non-certified products

Energy Conservation Implementation Measure 1-J – The City should create and convene an interdepartmental team to promote policy implementation, track policy adherence, and suggest additional items to be included in the City's climate-friendly purchasing program, including such tasks as the following:

- Review and analysis of current (baseline) purchasing by major product categories
- Prioritization of product categories in terms of greenhouse gas emissions implications and improvement potential
- Review of policies, procedures and organization staffing for implementation barriers
- Development of a multi-year implementation schedule based on priorities, difficulty, and upcoming solicitations
- Annual reporting of achievements under the policy to policy makers and the public

Energy Conservation Implementation Measure 1-K – The City of Aliso Viejo should pursue funding to enable installation of renewable energy systems at its facilities, where feasible, including solar collection systems on municipal building roof and solar water heating for municipal pools

Energy Conservation Initiative #2: The City should establish minimum levels of energy efficiency and green building standards for new residential, commercial, office, industrial and community facility buildings in Aliso Viejo.

Energy Conservation Implementation Measure 2-A – The City should consider amending its Green Building Ordinance to include incentives for developers of new and renovated buildings and facilities in Aliso Viejo to ~~meet at least LEED Silver certification standards. The City could encourage building and site plan design that~~ incorporates project energy efficiencies that surpass applicable 2008 California Title 24 Energy Standards. Any combination of the following design features may be ~~used to fulfill this measuresuggested:~~

- Reducing use of fluorescent light fixtures
- Installing lighter colored floor and wall coverings to reflect light, enhance existing lighting, and reduce thermal loads
- Installing rotary timers, photocells and occupancy sensors in lieu of standard wall switches to automatically turn off lighting and heating/air conditioning when areas are not in use
- Using daylighting controls with sensors to measure ambient light levels and reduce electrical lighting levels as natural lighting varies throughout the day
- Increasing insulation such that heat transfer and thermal bridging is minimized
- Limiting air leakage through the structure or within the heating and cooling distribution system
- Incorporating dual-paned or other energy efficient windows
- Incorporating energy efficient space heating and cooling equipment
- Incorporating use of tankless water heaters in all new residential units and community buildings
- Promoting building design that incorporates solar control to minimize direct sunlight upon windows; a combination of design features including roof eaves, recessed windows, "eyebrow" shades and shade trees should be considered
- Using LED lighting for all outdoor uses
- To the extent they are compatible with landscaping guidelines established by the City, planting shade producing trees, particularly those that shade paved surfaces such as streets and parking lots and buildings
- Implementing a paint and surface color palette for new projects that emphasizes light and off-white colors that will reflect heat from building
- Designing all buildings to accommodate renewable energy sources on properties occupying more than 2 acres

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Energy Conservation Implementation Measure 2-B – The City should include a green building checklist, such as those included in the GreenPoint or LEED programs, with all appropriate discretionary permit application and building permit applications.

Energy Conservation Implementation Measure 2-C – The City should ~~support and encourage and incentivize where feasible, all new buildings be constructed~~ edion to all new buildings to allow for easy, cost-effective installation of solar energy systems in the future, using such "solar ready" features such as the following.

- Designing the building to include optional roof orientation (22-55 degrees from the horizontal) with sufficient south-sloped roof surface
- Providing clear access without obstructions on the south sloped roof
- Designing the roof framing to support addition of solar panels
- Installing electrical conduit to accept solar electric system wiring
- Installing plumbing to support a solar hot water system and provision of space for a solar hot water storage tank

Energy Conservation Implementation Measure 2-D – The City should encourage development of alternative energy facilities for new and existing residences and businesses by expediting the planning review and approval process for installation of solar electric and solar thermal systems and [potentially](#) by waiving permit fees for related permits.

Energy Conservation Implementation Measure 2-E – The City should encourage photovoltaic arrays be placed on shade structures above parking lots, thereby providing a large area for photovoltaic panels. ~~City Staff should act as a facilitator between third-party energy providers and parking lot owners to encourage installation of photovoltaic equipment, and should develop marketing materials promoting benefits of parking lot solar PV arrays to property owners.~~

Energy Conservation Implementation Measure 2-F – The City can assist to promote the California Solar Initiative program and similar programs by creating an education outreach campaign that may include presentations and workshops for homeowners as well as web-based resources. The California Solar Initiative is a partnership between the State of California and California's investor-owned utilities that offers State-wide solar rebates. Energy rebates are the responsibility of Southern California Edison and San Diego Gas & Electric. The City can provide links to these utility providers on the Green City Initiative Webpage.

Energy Conservation Implementation Measure 2-G – The City should consider launching a voluntary "Residential Green Retrofit Program" to improve energy efficiency of existing single-family and multi-family residential properties. The Program could include outreach to promote green improvements, provide green construction technical guidance, create a green contractor certification system, connect homeowners, landlords and tenants with financing options, and provide quality assurance support.

Energy Conservation Implementation Measure 2-H – The City should post on the Green City Initiative Webpage a "billboard" that depicts energy conservation progress throughout the City.

Energy Conservation Initiative #3: The City should aggressively apply for grants and other funding sources for energy efficiency programs and renewable energy projects.

Energy Conservation Implementation Measure 3-A – The City should work with energy providers to access the energy providers' technical assistance and financial incentive programs. The City should participate in Southern California Edison's Energy Leader Partnership for community outreach.

Energy Conservation Implementation Measure 3-B – The City should investigate [available](#) funding for adoption and conduct of an energy financing program, such as that available through AB 811 energy

financing districts, to facilitate installation of renewable solar photovoltaic and hot water systems on existing residential, commercial, industrial and community facility buildings.

~~**Energy Conservation Implementation Measure 3-C** – The City should seek resources to develop new tools and assistance to foster energy retrofits of renter-occupied properties. This will include engaging stakeholders to provide recommendations on how to ensure both owners and tenants can be protected and receive benefits from energy efficiency retrofits so both have an incentive to support energy improvements.~~

Energy Conservation Implementation Measure 3-D-C – The City should seek resources to create a marketing campaign and offer technical assistance with local partners to encourage all businesses and residents to reduce energy consumption through conservation and energy efficient product purchasing. The campaign may collaborate with outreach performed by utility providers, trade groups and community-based organizations. The campaign may encourage purchase of energy efficient products and appliances to assist residents and businesses to reduce energy use.

Energy Conservation Initiative #4: The City should educate the public about climate-friendly opportunities and should work with the Aliso Viejo business community to educate it about climate-friendly procurement opportunities and practices.

Energy Conservation Implementation Measure 4-A – The City should publish on the Green City Initiative Webpage methods by which residents and businesses can calculate their carbon footprints and pursue strategies to reduce their greenhouse gas emissions.

Energy Conservation Implementation Measure 4-B – The City should partner with Southern California Edison to publish a "Home and Business Owner" manual about reducing energy consumption and resultant cost savings. The manual should encourage rebate programs.

Energy Conservation Implementation Measure 4-C – City staff should develop a "Community Green City Initiative Action Guide" that contains ideas for residents, employees and organizations to consider helping reduce their carbon footprints. Some examples could be the following.

For Greening Your Home

- Try adding a layer of clothing before turning on the heat
- Plug all appliances into power strips and turn off the strips when not in use
- Replace incandescent light bulbs with compact fluorescent bulbs
- Choose ENERGY STAR labeled appliances
- Insulate your water heater
- Lower water heater temperature
- Install and use a clothesline
- Install weather stripping around external doors
- Conserve water with water-efficient showerheads and faucets
- Conduct a home audit and take advisable cost-saving actions
- Look for opportunities to include passive solar design to minimize winter heating needs in new building or remodeling projects

- Collect rainwater for outdoor water needs
- Plant trees on your property
- Plant water-efficient landscaping and use smart controllers

For Getting Around

- Switch one work commute trip per week to biking, walking, taking transit or telecommuting
- Accomplish at least two neighborhood trips per week by biking or walking
- Carpool with neighbors or co-workers
- Purchase a fuel-efficient vehicle
- Choose to live where automobile dependence can be minimized (i.e. near transit, work, school, shopping)

For Consuming Less and Wasting Less

- Recycle all eligible materials
- Bring your own bags for shopping
- Purchase durable goods made from recycled materials
- Avoid excessively packaged goods
- Shop at local farmers markets
- Eat meat at one less meal each week
- Repair and reuse goods whenever possible
- Adapt used materials for new purposes
- When shopping in stores, look for options in Aliso Viejo first
- Plant a garden to grow your own food
- Freeze, can, dry and preserve seasonal fruits and vegetables

For Leading the Way

- Educate your family about, and establish, green family practices
- Discuss action opportunities with neighbors such as lowering water heater temperature, hiring an energy improvement contractor, or biking to work one day per week
- Discuss safe routes to school with neighbors and help create a safe street environment
- Become a mentor to other members of the Aliso Viejo community
- Become a community resource and share your skills and experience with others [taking local climate action](#)

Energy Conservation Implementation Measure 4-D – The City should consider offering a "Greenhouse Gas Emissions Reduction" Education Program for residents and business owners in Aliso Viejo to be conducted at the Aliso Viejo Conference Center on a semi-annual basis.



Energy Conservation Initiative #5: *The City should consider partnering with the Capistrano Unified School District and local schools to encourage interest in energy conservation.*

Energy Conservation Implementation Measure 5-A – The City should encourage all local schools to solicit student papers that express new conservation goals and measures that can be published on the Green City Initiative Webpage.

Energy Conservation Implementation Measure 5-B – The City should encourage local schools to enter into an energy saving contest. The winner can be recognized on the Green City Initiative Webpage.

Energy Conservation Implementation Measure 5-C – The City should encourage assistance from the student community to develop a "Shop Green" Program to increase consumer awareness about local green businesses and available green products, including where purchases can be made so consumers can easily make green purchasing choices

Energy Conservation Implementation Measure 5-D – The City should encourage assistance from the student community to organize and produce an Aliso Viejo "Eco Guide" that includes information about all green programs in the City and create targeted outreach materials for homeowners, residents and businesses about how to live a green lifestyle

Energy Conservation Implementation Measure 5-E – The City should encourage assistance from the student community to create opportunities for residents and businesses to participate in "fix-it" green programs that demonstrate how to incorporate green techniques and products in home and business renovation.

Vehicle Management and Transportation

Our transportation choices impact sustainability and quality of life. Transportation originated emissions are a major contributor to climate change and pose a threat to public health. In the short term, Aliso Viejo residents and visitors to Aliso Viejo can become more aware of the variety of ways in which their land use and transportation decisions contribute to greenhouse gas emissions and what they can do about it individually and collectively. In the long term, Aliso Viejo can become safer, quieter, less congested and more sustainable. In addition, people who participate in regular physical activity such as walking or bicycling gain significant health benefits. The benefits include longer life expectancy, lower risk of heart disease and stroke, prevention or delay of high blood pressure, decreased risk of colon cancer, lower risk of diabetes, weight loss, lower levels of anxiety, and improved overall psychological health. Availability of pedestrian and bicycle paths encourages individuals to be physically active and to connect with the natural environment for function or leisure.

Southern California Association of Governments Sustainable Communities Strategy

In compliance with SB 375, ~~in 2012~~ the Southern California Association of Governments adopted a Sustainable Communities Strategy (SCS) ~~in 2012~~. The SCS focuses on reducing greenhouse gas emissions from autos and light trucks. ~~Central to the OC SCS are the s~~Strategies identified to reduce GHG emissions ~~play a central role in the Orange County SCS~~. These strategies illustrate ~~that there is already~~already is a collective effort by many Orange County jurisdictions, agencies, and groups to link transportation and land uses through a variety of processes and an array of progressive measures. ~~The strategies~~Strategies outlined in the OC SCS include land use-related strategies, transportation system improvements, and best management practices (BMPs).

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Land Use Strategies include the following:

- Apply Transportation System Management practices to the currently planned arterials street system to maximize efficiency.
- Improve attractiveness of transit modes through enhanced service, frequency, convenience, and choices. Improve linkages between transit options to diminish automobile travel.
- Expand and enhance Transportation Demand Management (TDM) practices to reduce barriers to alternate travel modes and attract commuters away from single occupant vehicle travel.

Best Management Practices include the following:

- Transportation infrastructure investments such as implementation of smart streets, improving links between travel modes, and providing enhanced bus stops.
- Transportation system management measures that enhance the capacity of the existing system through better management and operation of the system.

Assembly Bill B 1358

Governor Arnold Schwarzenegger signed Assembly Bill 1358, known as the "Complete Streets Act," making California the first state in the nation to ensure all local streets and roads accommodate needs of bicyclists, pedestrians and transit riders as well as motorists. Fourteen states, including California, have adopted legislation, resolutions or internal policies that apply Complete Streets principles to state highways. Only California has enacted Complete Streets legislation for all local streets and roads. The

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Complete Streets Act requires cities and counties, when updating their general plans, to ensure local streets and roads meet needs of all users. The law took effect in January, 2011.

Personal transportation, including biking and walking, are essential components of sustainable transportation. Walking and bicycling are non-polluting forming modes of transportation that have a high potential for success in Aliso Viejo. The City of Aliso Viejo has a network of bicycle lanes. The City "Streets and Trails Amenities" identifies opportunities for the City to establish a more extensive system of pedestrian and bicycle trails. As part of the "Streets and Trails Amenities" Master Plan, the City will investigate opportunities to provide facilities for bicycle commuters that would promote cycling for short and medium length trips. Amenities may include parking, showers, bicycle racks and bicycle lockers. The City of Aliso Viejo should encourage and potentially incentivize large employers or employment centers to provide and maintain changing rooms, lockers and showers.

These groups of strategies generally are focused on reducing single occupancy vehicle use for commute trips. These programs generally ~~would~~ could apply to private employers in Aliso Viejo and also to City employees. A major aspect of these programs is that they would exceed traditional requirements implemented by the South Coast Air Quality Management District and other agencies for employees in Aliso Viejo. The primary focus is on voluntary programs and other incentive based strategies rather than on mandatory measures.

Vehicle Management/Transportation Initiative #1: *The City should implement safe planning for trails, transit, neighborhood electric vehicles, bicycles, pedestrians and joggers.*

Vehicle Management/Transportation Implementation Measure 1-A – The City will design a "Complete Streets Master Plan" as part of a comprehensive update to its General Plan that will comply with State legislative requirements. The Master Plan will depict a network of Complete Streets, but initially will focus on Aliso Viejo Parkway and Wood Canyon Drive. The "Complete Streets" program would be comprised of an integrated network of trails, sidewalks and bicycle paths, connect key areas of Aliso Viejo, identify areas for future expansion of services, and address safety. The Master Plan should incorporate and supplement strategies from this Plan and should include Low Impact Development standards.



Management/Transportation Implementation Measure 1-B – City Staff should develop a tiered bicycle infrastructure incentive program for new development based on size and cost thresholds.

Infrastructure may include bicycle lanes, sidewalks and storage areas, depending on building size, to ensure safe access for bicyclists throughout Aliso Viejo. ~~Any related ordinance could be tiered similarly to a green building ordinance.~~

Vehicle Management/Transportation Implementation Measure 1-C – ~~The~~ City ~~staff~~ should add directional signs to highly traveled sections of the bicycle and pedestrian network, upgrade traffic signals to include bicycle and pedestrian priority crossing, and make necessary infrastructure improvements to ensure a safe network of bicycle and pedestrian paths, including sidewalks. A comprehensive system of directional signs for cyclists and pedestrians would indicate directions and distances to various destinations and be color-coded to correspond to different types of local and regional bicycle route networks.

Vehicle Management/Transportation Implementation Measure 1-D – The City should investigate elimination or reduction of minimum parking requirements for new non-residential and mixed-use development. The City will ensure adequate parking is provided.

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Vehicle Management/Transportation Implementation Measure 1-E – The City should ~~provide~~ develop incentives for shared parking programs in new mixed-use developments. The City will ensure adequate parking is provided.

Vehicle Management/Transportation Implementation Measure 1-F – The City should develop and implement priority parking plans for bicycles and neighborhood electric vehicles.

Vehicle Management/Transportation Implementation Measure 1-G – The City should reach funding for providing bicycle racks in Town Center and install bicycle racks and bicycle parking at City-owned facilities where bicycle parking infrastructure currently does not exist. ~~Bicycle parking is essential to encourage bicycle ridership for commuting and shopping.~~

Vehicle Management/Transportation Implementation Measure 1-H – The City should revise the "Streets and Trails Amenities Master Plan" (October, 2005) in accordance with adopted changes to the non-vehicle route network.

Vehicle Management/Transportation Implementation Measure 1-I – The City should work with Capistrano Unified School District to establish ride sharing programs and a "Safe Routes To School Plan."

Vehicle Management/Transportation Implementation Measure 1-J – City staff should develop and seek funding for implementing a "Bike Sharing" Program.

Vehicle Management/Transportation Implementation Measure 1-K – The City should use recycled content in street surface construction where appropriate. Net energy expenditure to re-use materials is much lower than energy required to manufacturing and transporting of non-recycled resources. Integrating recycled rubberized additives when resealing street surfaces can help reduce greenhouse gas emissions in Aliso Viejo.

Vehicle Management/Transportation Initiative #2: The City should support a "Shop Local" campaign and should support alternatives to the private vehicle for access to shopping and entertainment districts.

Vehicle Management/Transportation Implementation Measure 2-A – The City should encourage business owners and employers to develop incentives for employees to carpool. Carpooling is one way employees can lower their carbon emissions related to work commutes. ~~Incentives may include financial incentives and vanpool service.~~

Vehicle Management/Transportation Implementation Measure 2-B – The City should develop and conduct a public campaign to increase resident and visitor awareness of transportation alternatives and focus the campaign around the idea that Aliso Viejo is an eco-friendly destination where people can leave their vehicles and enjoy walking, shopping and dining.

Vehicle Management/Transportation Implementation Measure 2-C – The City should conduct parking studies for key commercial developments. The parking studies may lead to an investigation of revising commercial parking requirements in the Aliso Viejo Zoning Code. Parking maximums, combined with increased accessibility to alternative modes of transportation, will reduce vehicle miles traveled and greenhouse gas emissions, create more attractive street frontages, reduce development costs, and lessen the amount of impervious pavement (which decreases storm water runoff and lowers heat island effect). Staff should determine parking limits through a parking study of existing local shopping centers and industrial parks, and should determine methods, routes and vehicle miles traveled during employee commutes, and should conduct a feasibility analysis for a parking management program and implement appropriate measures. The City will ensure adequate parking is provided.

Vehicle Management/Transportation Implementation Measure 2-D – The City should encourage, develop and advertise an enhanced parking program in Town Center. The City will ensure adequate parking is provided.

~~**Vehicle Management/Transportation Implementation Measure 2-E** – The City should seek funding for providing bicycle racks to secure bicycles in Town Center and The Commons at Town Center.~~

Vehicle Management/Transportation Implementation Measure 2-F – The City should seek funding to develop and implement a program to increase electric vehicle charging stations in Town Center.

Vehicle Management/Transportation Implementation Measure 2-G – The City should recommend Town Center property owners and property managers consider reserving some parking spaces in Town Center ~~to for~~ exclusive use of electric vehicles.

Vehicle Management/Transportation Initiative #3: The City should develop a comprehensive program for pursuing a cooperative relationship with adjacent cities to facilitate regional transportation and vehicle management.

Vehicle Management/Transportation Implementation Measure 3-A – The City should continue to seek funding for increased and cleaner transit service in and around Aliso Viejo, which may include bus

shelters and dedicated stops, sub-regional feeder routes and services, park and ride services, bicycle racks, an enhanced shuttle service, and parking preferences for vanpools and “green” vehicles.

Vehicle Management/Transportation Implementation Measure 3-B – The City should contact adjacent cities about sharing in costs for a local transit system and solicitation of interest for forming a cooperative Transportation Demand Management Program that may include transit passes, enhanced shuttle service, car sharing, parking preferences for vanpools and “green” vehicles, additional bicycle parking showers and other on-site amenities.

Vehicle Management/Transportation Implementation Measure 3-C – [The City should apply annually to the South Coast Air Quality Management District Mobile Source Reduction Committee for AB 2766 “Local Government Match Program” grants for projects that reduce mobile source emissions.](#) The City should seek opportunities to pool AB 2766 subvention funds with neighboring cities to fund programs that will reduce mobile source emissions (e.g. traffic synchronization, fueling station infrastructure, teleconferencing facilities).

~~**Vehicle Management/Transportation Implementation Measure 3-D** – The City should apply annually to the South Coast Air Quality Management District Mobile Source Reduction Committee for AB 2766 “Local Government Match Program” grants for projects that reduce mobile source emissions.~~

Vehicle Management/Transportation Initiative #4: *The City should develop and advertise transit options and advantages in Aliso Viejo.*

Vehicle Management/Transportation Implementation Measure 4-A – The City should consider advertising financial and greenhouse gas emissions advantages of carpooling and establish a program to make it easier for potential ride sharers to find one another. Increasing usage of fuel efficient vehicles reduces fuel consumption and costs, as well as reducing greenhouse gas emissions. Pamphlets, workshops, and internet resources can be effective means to inform local businesses of merits of using alternative fuel or fuel efficient vehicles. The City should provide merchants with fliers/posters that publicize public mass transit schedules to encourage customers to use mass transit.

Vehicle Management/Transportation Implementation Measure 4-B – The City should encourage developers and/or property managers to provide a transit subsidy for all employees/residents for a determined time for all new commercial, business park/office, mixed-use and multi-family residential development.

Vehicle Management/Transportation Implementation Measure 4-C – For planned high density and mixed use developments, the City should recommend project applicants consult with the Orange County Transportation Agency and incorporate all appropriate and feasible transit amenities into development plans.

Vehicle Management/Transportation Implementation Measure 4-D – The City of Aliso Viejo should work with large employers and commercial/industrial complexes to implement trip vehicle miles traveled reduction strategies including alternative transportation plans, including carpooling and public transportation.

Vehicle Management/Transportation Implementation Measure 4-E – The City of Aliso Viejo should ensure future development projects create maximum opportunity for use of bicycles as an alternative work transportation mode.

Vehicle Management/Transportation Implementation Measure 4-F – The City should consider partnering with the Southern California Air Quality Management District to host a Low Emissions/Alternative Fuel Auto Display for the public to learn more about alternative fueled passenger vehicles and public fleet.

Vehicle Management/Transportation Initiative #5: The City should improve alternative transportation access and service at all municipal facilities.

The City of Aliso Viejo employs approximately 40 people (combined City staff and consulting staff). The City has an opportunity to serve as an example to the community by reducing single-occupancy vehicle use by City employees by continuing to promote and incentivize alternatives to driving. Providing subsidized transit passes, encouraging telecommuting, and increasing opportunities for bicycling can provide viable alternatives to driving to work.

Vehicle Management/Transportation Implementation Measure 5-A – The City should attempt to reduce single-occupancy vehicle commuting by City employees by doing the following.

- Considering creation of a small-scale car sharing program for City employees
- Considering creation of a small-scale bike sharing program for City employees
- Promoting and implementing telecommunication and alternative work schedules for City employees

Vehicle Management/Transportation Implementation Measure 5-B – The City should develop incentives for City employees to utilize alternative meeting methods and alternative transportation modes to get to work. The majority of municipal employees travel to work by themselves in their own automobile. Private automobiles also are the primary modes of travel to offsite meetings. Incentive programs for City employees to utilize alternative meeting methods to commute to work and attend off site meetings could result in behavioral changes in staff and increased use of alternative modes of transportation. Incentive programs could include using virtual meeting programs as a preferred method of communication for internal and external meetings.

Vehicle Management/Transportation Implementation Measure 5-C – The City should incentivize provision of designated/preferred parking for van pools, carpools, and alternative fuel vehicles and should install common area electric vehicle charging stations and secure bicycle racks at all municipal facilities. The City currently does not have parking spaces designated exclusively for alternative fuel vehicles or for carpool, vanpool or employee-owned alternative fuel vehicles. Requiring designated/preferred parking for vanpools, carpools and alternative fuel vehicles at all municipal facilities supports and encourages [and rewards](#) use of those modes of transportation.



INITIATIVES AND IMPLEMENTATION MEASURES

Waste Management and Recycling

The United States has approximately 5 percent of the world's population but consumes approximately 30 percent of the world's resources and creates approximately 30 percent of the world's waste. In California, 60 percent of waste is generated by the commercial sector. Waste generation contributes to greenhouse gas emissions because vast amounts of energy and water are used to produce consumer materials and packaging that is eventually discarded and buried in a landfill. Burying waste in landfills produces carbon dioxide and methane.

This pattern of ~~over~~ consumption is responsible for resource depletion and overproduction of waste. Aliso Viejo can use ecologically and socially responsible products and services, which is imperative for enhancing sustainability in the City. "Eco products" and services reduce environmental impacts, are recyclable, made from recycled content, save energy and water, reduce waste, are made from organic and renewable materials and are free from hazardous or toxic materials. By using wise purchasing choices, the City can help support the market for green products.

Senate Bill (SB) 1016 requires the 50% solid waste diversion requirement mandated by AB 939 be measured in terms of pounds per person per day. Computing diversion, per Senate Bill 1016, requires taking the average of 2003-2006 as a city's base per capita solid waste generation rate. Half of that number is taken as the definition of 50% diversion. Therefore, if a jurisdiction has a base 2003-2006 trash generation rate of 14 pounds/person per day (computed by dividing total daily tonnage by total population), the City must demonstrate a landfill disposal rate not exceeding 7 pounds per person per day. The Department of Resources Recycling and Recovery, or CalRecycle, set targets for per capita per day disposal rates. For residents, the target is 5.8 pounds per person per day (ppd); for employees, 7.7 ppd. Currently, the City diverts more than 50 percent of waste, a rate in excess of the diversion rate required by the California Integrated Waste Management Board. Local businesses can significantly reduce refuse collection and disposal bills through increased recycling and composting.

The Food Waste Diversion Program is an outgrowth of California Assembly Bill 939 (the "Integrated Waste Management Act of 1989"). Assembly Bill 939 did not include any rules or procedures for measuring diversion of food waste. One provision of the Integrated Waste Management Act was that cities divert 50% of their solid waste volume from landfills by 2000. Many programs in response have been developed to help implement requirements of Assembly Bill 939. One such program in Orange County is the Food Waste Diversion Program, which uses innovative technology to process food waste into compost. Food waste generated from food manufacturing facilities, supermarkets, schools, hospitals, restaurants, food courts and homes is a large component of the waste stream that is not currently diverted. The Program uses a pioneering dehydration system that reduces food waste in weight and volume. Left over mixtures of dehydrated food waste material can be used as a nutrient ~~right~~ additive to compost. The Program also will lessen need for frequent trash service since the food will be diverted from the waste stream. This ultimately will reduce greenhouse gas emissions. Although this project ended in 2012, several food establishments in Aliso Viejo have continued to implement the Program.

Construction and demolition debris from work in Aliso Viejo generally consists of wood, drywall, metal, concrete, dirt and cardboard, much of which is recyclable. ~~Once sent to a landfill, the organic materials break down and emit methane, a potent greenhouse gas.~~ Recycling construction and demolition waste keeps it from ending up in a landfill and reduces upstream energy consumption required to manufacture new construction materials. Developers also can save money by taking construction and demolition waste to recycling and reuse facilities that may have lower fees than landfills and may buy back selected materials.

California retailers distribute more than 19 billion plastic retail carryout bags annually. Fewer than 5% are currently recycled (CalRecycle 2010). Since plastic bags are lightweight and easily caught in the wind, they make up a significant amount of the litter found in storm drains that lead directly to the beach and ocean. Similar to plastic bags, polystyrene food packaging is lightweight and aerodynamic, easily blown into gutters and storm drains even when properly discarded. Polystyrene is also very brittle, so when littered it quickly breaks into small pieces making cleanup difficult. Because plastic bags and polystyrene products are petroleum byproducts, reducing or eliminating plastic bags and polystyrene in the environment reduces greenhouse gases entering the atmosphere. The City is monitoring how other cities are implementing plastic bag bans in an effort to determine appropriateness of such a ban within Aliso Viejo. Future steps toward banning plastic bags will be determined by further direction from City Council. The City now prohibits use of polystyrene containers at all City events and special events.



Waste Management savings in municipal operations are particularly important. How the City uses material goods in its municipal facilities and how the City disposes solid waste relates directly to resource conservation in Aliso Viejo. City staff every day encounter things like reams of paper, electronic equipment, food service items, recycling bins, and office products. For every ton of corrugated cardboard boxes kept from entering a landfill, approximately 3.87 tons of Carbon Dioxide equivalent are avoided. For every ton of plastic film (in the form of Low Density Polyethylene LDPE) recycled, approximately 1.9 tons of Carbon Dioxide equivalent are avoided annually. For every ton of mixed general paper recycled, approximately 4.3 tons

of Carbon Dioxide equivalent are avoided. The decisions the City makes about which products to purchase and how to dispose of the products often occur out of sight of most employees. There always is opportunity for the City to do more to reduce, reuse, recycle and rethink more efficiently and therefore more effectively. When organic wastes are buried in landfills, bacteria decompose the materials and emit methane and carbon dioxide. According to CalRecycle's 2008 Waste Characterization Study, organic materials comprise approximately 64 percent of all disposed waste in California. Food scraps constitute the largest portion of organic waste. Lumber, grass, leaves and other yard trimmings also are major components. Diverting organic waste from disposal in landfills is an important step toward reducing Aliso Viejo's waste related methane emissions.

Aliso Viejo and many jurisdictions in California already have strong recycling and yard waste diversion programs. Some cities and counties have developed additional programs that collect residential and commercial food scraps and soiled paper and compost the material at a facility. The resulting compost can be used as a soil amendment for farms, gardens and landscaping projects.

Personal choice underlies many changes that will have to occur for the Aliso Viejo community to achieve its waste reduction and related greenhouse gas emissions reduction goals. Therefore, enhancing and expanding current education and outreach efforts is fundamental to successful waste management and recycling.

Waste Management and Recycling Initiative #1: *The City should institute a comprehensive waste reduction and recycling program in municipal facilities.*

Waste Management and Recycling Implementation Measure 1-A – The City should work with major office tenants to create a low-waste plan for professional office facilities to reduce daily per capita solid waste disposal and provide public education programs regarding low-waste strategies and implementation.

Waste Management and Recycling Implementation Measure 1-B – The City should pursue a partnership with the Capistrano Unified School District to promote waste reduction and recycling education.

Waste Management and Recycling Implementation Measure 1-C – The City should consider prohibiting use of single-use plastic beverage bottles in City buildings and at City events.

Waste Management and Recycling Implementation Measure 1-D – The City should track municipal government paper use and limit its consumption.

Waste Management and Recycling Implementation Measure 1-E – The City should implement trash reduction measures in all municipal facilities, such as the following.

- Keep mailing lists current
- Reduce junk mail by sending a postcard to Mail Preference Service, Post Office Box 9008, Farmingdale, NY, 11735, requesting the City of Aliso Viejo be deleted from all mailing lists
- Purchase in bulk and choose products that use less packaging and work with companies that do the same
- Use reusable and/or recyclable containers for shipping
- Rent equipment that is used only occasionally, purchase long-lasting equipment, and establish a regular maintenance routine to prolong life of copiers, computers and other equipment
- Re-use file folders, cardboard boxes, envelopes, paper clips, rubber bands and packing peanuts
- Refill and reuse fax, printer and copier cartridges
- Donate unused materials and old desks, office equipment, carpeting, telephones and other items to facilities such as Goodwill or the Salvation Army; give old computers to an educational program
- Recycle office paper and old telephone books
- Recycle items in break area

- Arrange a green waste dumpster for major trimming, pruning or mowing projects
- Replace individual trash bins with large collection facilities in common areas; in most office settings, including the City of Aliso Viejo City Hall, each employee (whether cubical or in an office) has his/her own individual trash bin, which makes it easy and enticing for employees to toss all waste into one trash bin without considering what can and should be reused or recycled. By replacing individual trash bins with larger collection facilities in common areas, the City can influence staff behavior by encouraging employees to reconsider before disposing of something in a personal receptacle
- Require employees to place their names on Opt-out lists to stop receiving unwanted mail; on average, 59 percent of all mail is advertising (CBS News, 2011). Most of this material is disposed of in general trash receptacles or recycling facilities. By participating in opt-out programs, City employees can stop unwanted advertisements from being delivered and thereby eliminate negative effects of production, delivery and disposal of "junk" mail
- Require staff to receive electronic publications rather than printed publications when possible
- Prioritize purchase of green products when a green alternative is available
- Replace single-use food service products in municipal facilities with recyclable or reusable products. Typical single-use food service items include plates, bowls, cups and utensils that are disposed of in the municipal waste stream because they cannot be recycled or reused. Single-use food service items are available in recyclable (made from papers, bio-resins, bamboo, etc.) and reusable materials (traditional silverware)
- Use 100 percent post-consumer recycled content paper in all printers, copiers and fax machines (Paper made from 100 percent post-consumer waste is produced entirely from paper that comes out of a recycling bin. Using post-consumer recycled paper helps eliminate the need for harvesting more virgin materials and closes the recycling loop by creating a demand for the paper the City recycled. A study referred to in the City of Irvine "Draft Sustainable Operations Strategic Plan (August, 2011) indicates a 2002 study the Environmental Defense Paper Task Force conducted demonstrated that, compared to virgin paper, post-consumer paper uses 44 percent less energy, reduces greenhouse gas emissions by 37 percent, reduces nitrogen oxide emissions by 23 percent, reduces particulate emissions by 41 percent, and produces 48 percent less solid waste)

Waste Management and Recycling Implementation Measure 1-F – The City should institute electronic discretionary application submittal and electronic plan check procedures.

Waste Management and Recycling Implementation Measure 1-G – The City should require City-sponsored events and events in municipal facilities to be eco-friendly. This will enable the City to showcase its environmental leadership and influence the public to conserve more resources and be more eco-friendly.

Waste Management and Recycling Implementation Measure 1-H – The City should develop an approved "Green Product" list and should restrict product purchases to products on the list, when applicable. "Green" products often are described as products or services that have a reduced impact on human health and the environment when compared with competing products or services that serve the same purpose. By restricting product purchases to green products (when available) the City eliminates the opportunity for non-green products to be purchased when there is a viable alternative.

Waste Management and Recycling Implementation Measure 1-I – The City should require its maintenance contractor to use naturally-derived cleaning products. Implementing a green cleaning program can reduce negative effects of cleaning and sanitary operations have on the environment. Using environmentally friendly cleaning products can help decrease air pollution, water pollution, and ozone depletion.

Waste Management and Recycling Implementation Measure 1-J – The City should install compost bins at municipal facilities where feasible. Compost bins are a tool the City can use to divert food scraps from the waste stream. Food waste is collected into a compost bin where soil and/or water are added to activate breakdown of waste material. Compost can regenerate poor soils, clean contaminated soils, and prevent pollution by diverting organic materials from landfills. It takes several weeks to compost food scraps into usable fertilizer. Composting requires little capital investment.

Waste Management and Recycling Implementation Measure 1-K – The City should use food service providers for event catering that source local, seasonal food and implement sustainable best practices. By purchasing local foods in season, environmental impacts caused by shipping foods are eliminated and money spent on food goes directly to the farmer. Agricultural sustainable best practices involve food production involve methods that are healthy, do not harm the environment, respect workers, are humane to animals, provide fair wages to farmers, and support farming communities.

Waste Management and Recycling Implementation Measure 1-L – The City should establish a zero waste program for municipal operations that would mean designing and managing goods and products to allow for conservation, reuse and recycling of all resources rather than having them sent to a landfill. The City would establish a detailed recycling, composting and Staff education program that would ensure at least 90 percent of all materials were reused, recycled or composted.

Waste Management and Recycling Implementation Measure 1-M – The City should require increased recycling and composting at all public events. Public events are notorious for excessive packaging and use of disposable utensils, plates and cups. California Assembly Bill 2176 already requires large public venues and special events to develop and implement solid waste management plans. Therefore, this measure would solely be for events conducted in public areas such as street fairs and park events. All public events would require a waste plan. The event holder would be required to divert a certain amount of waste through recycling and composting to be awarded the Special Event Permit.

Waste Management and Recycling Implementation Measure 1-N – The City should establish an "Environmentally Preferable Purchasing Program" for all municipal operations. Environmentally Preferable Purchasing refers to buying products and services with reduced effects on human health and the environment. This policy would require environmentally preferable products be purchased when possible and reasonable. An Environmentally Preferable Purchasing Policy for local government operations would establish the City of Aliso Viejo municipal operations as an example for citizens to follow to decrease City-wide greenhouse gas emissions.

Waste Management and Recycling Implementation Measure 1-P – The City should increase its current requirement related to recycling opportunities at Special Events through Special Event Permit

conditions of approval and should provide a recycling guide for local special event organizers and planners.

Waste Management and Recycling Implementation Measure 1-Q – The City should adopt purchasing practices and standards to support reductions in greenhouse gas emissions, including preferences for energy efficient office equipment, and use of recycled materials and manufacturers that have implemented green management practices.

Waste Management and Recycling Implementation Measure 1-R – The City should establish bidding standards and contracting practices that encourage greenhouse gas emissions reductions, including preference or points for use of low or zero emission vehicles and equipment, recycled materials, and provider implementation of other green management practices.

Waste Management and Recycling Initiative #2: The City should create a resource center for comprehensive information on recycling and waste management.

Waste Management and Recycling Implementation Measure 2-A – The City should post all relevant information on recycling and waste management, including availability of City-wide opportunities to recycle and educational information about recycling, on the Green City Initiative Webpage.

Waste Management and Recycling Implementation Measure 2-B – The City should develop a public education program to increase awareness of purchasing recycled goods and money savings associated with use of green recycling and waste management practices.

Waste Management and Recycling Implementation Measure 2-C – The City should promote deconstruction and reuse of building materials through written outreach materials about residential remodeling, and through direct consultations with builders and contractors.

Waste Management and Recycling Implementation Measure 2-D – The City should post information about local business success stories with recycling and waste management practices on the Green City Initiative Webpage.

Waste Management and Recycling Implementation Measure 2-F – The City should create a program to promote reusable shopping bags and biodegradable food package containers.

Waste Management and Recycling Initiative #3: The City should encourage a comprehensive waste reduction and recycling program for new or rebuilt commercial and office projects.

Waste Management and Recycling Implementation Measure 3-A – The City should consider providing do-it-yourself composting bins and training workshops to residents and business owners. The City could work with CR&R to establish a curbside composting service as a pilot project. The City should educate the community about benefits associated with composting through brochures and handouts.

Waste Management and Recycling Implementation Measure 3-B – The City should encourage local maintenance crews to compost green waste on site.

Waste Management and Recycling Implementation Measure 3-C – The City should recommend apartment managers and managers of professional office developments include waste diversion resources and information in a "welcome basket" for new Aliso Viejo tenants.

Waste Management and Recycling Implementation Measure 3-D – The City should institute a partnership with professional offices within Aliso Viejo for e-waste reduction and recycling at those facilities.

Waste Management and Recycling Implementation Measure 3-E – The City should consider expanding its prohibition of Styrofoam products at municipal events and facilities to apply to all commercial uses in Aliso Viejo.



Waste Management and Recycling Initiative #4: The City should establish itself as the leading city in south Orange County for green business and green job growth.

Waste Management and Recycling Implementation Measure 4-A – The City should create and implement a business development program to attract renewable energy and green technology manufacturing companies to establish a presence in Aliso Viejo and facilitate creation of jobs in the renewable/clean energy employment sector.

Waste Management and Recycling Implementation Measure 4-B – The City should promote innovative renewable energy partnerships and demonstration projects.

Waste Management and Recycling Implementation Measure 4-C – The City should work with business owners in the City to develop and implement a City of Aliso Viejo Green Business Program that incorporates goals and strategies for waste reduction, energy efficiency, water conservation and green purchasing and that shares information and promotes green business strategies and best practices and should establish an Aliso Viejo Green Business Certification Program.

Waste Management and Recycling Implementation Measure 4-D – The City should conduct green business workshops to help local businesses go “green” and to showcase local green vendors and products.

Waste Management and Recycling Initiative #5: The City should consider instituting a comprehensive waste reduction and recycling program in new and rebuilt multi-family residential projects.

Waste Management and Recycling Implementation Measure 5-A – The City should recommend apartment owners/managers develop model lease language that outlines responsibility of building managers to provide recycling systems and of tenants to recycle waste.

Waste Management and Recycling Implementation Measure 5-B – The City should include provisions and incentives for new recycling infrastructure and facilities as part of land use planning for new development.

~~**Waste Management and Recycling Implementation Measure 5 C**~~ — The City should organize and produce an Aliso Viejo "Eco Guide" that includes information from all green programs in the City and create targeted outreach materials for homeowners and residents about how to live a green lifestyle built around concepts of "reduce, reuse and recycle."

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Land Use

Aliso Viejo is ~~over approximately 90-95~~ percent developed ~~and includes~~ more than 20 parks and an extensive bicycle and trails system across a portion of the City. Recreational and natural open space provides opportunities for healthy outdoor activities and community gathering places [there](#). Natural open space is important for habitat and species protection and for public health of City residents. Public open space is the most evident type of open space. However, it is equally important for each residence to be its own sustainable ecosystem. Private yards can become edible gardens that provide healthy food for families or drought tolerant and native gardens that attract birds and butterflies.

The greenhouse gas emissions inventory does not account for emissions emanating from any specific land use; rather, the inventory considers effects of land use comprehensively within the transportation sector. Where people live determines distance they travel to work, to shopping and to other destinations and influences whether they choose to walk, bicycle, use public transit or drive.

Southern California Association of Governments Sustainable Communities Strategy

In compliance with SB 375, in 2012 the Southern California Association of Governments adopted a Sustainable Communities Strategy (SCS). The SCS focuses on reducing greenhouse gas emissions from autos and light trucks. ~~Central to the OC SCS are the s~~Strategies identified to reduce GHG emissions [play a central role in the Orange County SCS](#). These strategies illustrate ~~that~~ there is already a collective effort by many Orange County jurisdictions, agencies, and groups to link transportation and land uses through a variety of processes and an array of progressive measures. The strategies outlined in the OC SCS include land use-related strategies, transportation system improvements, and best management practices (BMPs), [including the following](#):-

Support Transit-Oriented Development-

- Support infill housing development and redevelopment.
- Support mixed-use development and improve walkability of communities.
- Increase regional accessibility in order to reduce vehicle miles traveled.
- Improve jobs-housing ratio.
- Promote alternatives to single-occupant automobile use.

Land Use Initiative #1: *The City should develop and implement an "Incentive Program" for residents, business owners and developers of new projects and re-developed property that is intended to encourage sustainable development and to promote use of clean air technologies.*

Land Use Implementation Measure 1-A – The City should develop a "Green Award Program" that provides official recognition of an individual, group or business that adopts sustainable practices.

~~Land Use Implementation Measure 1-B~~ – The City should foster more sustainable development patterns on private property through modifications to the City General Plan, Zoning Code, development Ordinances and planning and development guidelines.

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Land Use Implementation Measure 1-~~C-B~~ – The City should consider permitting a higher "floor area ratio" to ground coverage than currently is permitted.

Land Use Implementation Measure 1-~~D-C~~ – The City should encourage mixed use and live-work developments.

Land Use Implementation Measure 1-~~E-D~~ – The City should reduce required parking for new development. Effective mixed use development would reduce the need for parking, resulting in greater utilization of properties for development and increased potential for open space.

~~**Land Use Implementation Measure 1-F** – The City should provide incentives for land uses to perform closer to "Zero Net Energy."~~

Land Use Implementation Measure 1-~~G-E~~ – The City should consider reducing permit fees and expediting application processing for development project applications that are consistent with provisions in the Green City Initiative and the Aliso Viejo General Plan.

~~**Land Use Initiative #2:** The City should encourage and provide for more sustainable friendly development in its General Plan.~~

Land Use Implementation Measure 12-A-F – The City of Aliso Viejo should provide for more mixed use in its General Plan and should investigate the feasibility of re-designating the General Plan Land Use Element designation and related zoning to "Mixed Use" for vacant and underutilized properties within the City.

Land Use Implementation Measure 21-B-G – The City should incorporate greenhouse gas emissions reduction considerations into the Aliso Viejo General Plan and greenhouse gas emissions evaluations into the City environmental review process.

Land Use Implementation Measure 21-D-H – The City should encourage and incentivize innovative pedestrian friendly development projects to reduce traffic and to improve public health opportunities within Aliso Viejo.

Land Use Implementation Measure 21-E-I – The City should encourage building orientations and landscaping that enhance natural lighting and sun exposure in new development.

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Land Use Implementation Measure 21-F-J – The City should institute bicycle/pedestrian days by closing selected streets to private vehicles and encouraging people to use streets for art displays, performances and socializing.

Land Use Implementation Measure 21-G-K – The City should consider permitting "walkable commercial" locations throughout Aliso Viejo. These uses could provide goods and services within or adjacent to existing residential neighborhoods, thereby shortening the distance between residents and services.

Land Use Implementation Measure ~~21-H-L~~ – The City should encourage new and rebuilt non-residential projects to install bicycle parking facilities and other cyclist amenities at a level commensurate with the number of employees of the project.

~~**Land Use Implementation Measure 2-I** – The City should review and amend the Aliso Viejo Zoning Code to provide for use development standards that could improve implementation of "climate-friendly" land use and transportation policies, including requiring increased on-site unpaved areas and green plantings.~~

Land Use Implementation Measure ~~21-J-M~~ – The City should consider promoting local sustainable agriculture to reduce greenhouse gas emissions associated with food production, processing and transport. This could include promotion of purchasing of locally-grown and organic produce at farmers markets in Aliso Viejo.

Land Use Initiative #~~32~~: *The City should design "complete streets" demonstration projects as part of a comprehensive update to its General Plan to foster favorable land use improvements.*

Land Use Implementation Measure ~~32-A~~ – The City should prioritize roadways for complete street designs and implementation. The priority roadways should be Aliso Viejo Parkway and Wood Canyon Drive.

Land Use Implementation Measure ~~32-B~~ – The City should provide appropriate bicycle and pedestrian amenities along complete streets, trails and sidewalks. These amenities may include bicycle racks, water fountains, and benches, trash/recycling cans, and call boxes.

Land Use Implementation Measure ~~32-C~~ – The City should provide traffic calming devices and other measures to reduce traffic speed and to increase safety for non-motorized multi-modal transit modes along complete streets.

Land Use Initiative #~~43~~: *The City should investigate ways to increase green spaces within and adjacent to Aliso Viejo.*

Land Use Implementation Measure ~~43-A~~ – The City should encourage community gardens on various properties currently vacant and consider allowing organic gardens and community gardens anywhere feasible.

Land Use Implementation Measure ~~43-B~~ – The City should ~~consider~~encourage planting wildflower ecosystems in underutilized open space.

Land Use Implementation Measure ~~43-C~~ – The City should seek funding to transform vacant properties and under used areas into pocket parks with benches, bicycle racks, shade trees and patios with tables to accommodate pedestrians and bicycle riders.

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Land Use Implementation Measure 43-D – The City should sponsor an annual "planting day" that would encourage and enable members of the community to plant drought-tolerant plants, bushes and trees in designated areas throughout Aliso Viejo. This could include encouraging residents and business owners to plant shade trees on private property.

Land Use Implementation Measure 43-E – The City should pursue funding to develop a City wide Urban Greening Plan that connects existing and future parks and open space through greenway linkages and pedestrian/bicycle paths.

Land Use Implementation Measure 43-F – The City should design and implement new trail connections to Aliso Woods Canyon Regional Park in cooperation with the County of Orange.

Land Use Implementation Measure 43-G – The City should work with the Aliso Viejo Community Association to incorporate sustainable principles and practices into park and playground design and maintenance (e.g. grass recycling; reclaimed irrigation water; water conservation; recycling and waste management; integrated pest management).

~~**Land Use Implementation Measure 43-H** – The City should require all new developments to provide on-site usable open space focused to recreational demands of the developments.~~

Land Use Implementation Measure 43-I – The City should encourage the Aliso Viejo Community Association ([AVCA](#)) to establish a native landscape demonstration in every park 1 acre or larger in size.

Land Use Implementation Measure 43-J – The City should encourage the Aliso Viejo Community Association ([AVCA](#)) to establish a community garden in every park 5 acres or larger in size.

Land Use Implementation Measure 43-K – The City should work with schools and community groups to create partnerships to establish and maintain community gardens and to promote a "Tree Dedication Program."

Land Use Implementation Measure 43-L – The City should promote the Aliso Viejo Ranch as a location for history and nature, including native and drought tolerant landscapes.

Land Use Implementation Measure 43-M – The City should inventory existing trees on City properties and street parkways for additional tree planting opportunities and replacement with low water use trees.

Land Use Initiative #54: The City should work with property owners and business owners in identified districts of the City, such as Town Center and City Walk, to implement sustainable practices in those districts.

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Land Use Implementation Measure 54-A – The City should work with property owner to amend the Vantis Specific Plan to depict additional pedestrian and bicycle amenities, outdoor community gathering places, and appropriate linkages through City Walk to the remainder of the Vantis community and Town Center amenities.

Land Use Implementation Measure 54-B – The City should encourage the property owner/developer of the Vantis Specific Plan to install outdoor public plazas at the northerly end of the City Walk development.

Land Use Implementation Measure 54-C – The City should work with Town Center property owners and management to develop and implement a Vision/[Enhancement Opportunities](#) Plan for Town Center.

Land Use Implementation Measure 54-D – The City should incorporate neighborhood elements such as roundabouts, meandering sidewalks, street trees, public plazas and bicycle and pedestrian improvements that create a sense of place in Town Center.



Land Use Initiative #65: The City should investigate funding opportunities to assist the City in landscaping the Route 73 right-of-way.

Land Use Implementation Measure 65-A – The City should include landscaping components for the Route 73 right-of-way, such as the following.

- Landscape treatment that would distinguish Aliso Viejo from adjacent communities
- Cooperative alliances with owners of private property adjacent to the Corridor and stakeholders to promote Corridor beautification
- A horticultural plant palette that introduces color compatible with applicable climatic and ecological environments and land use, is sustainable, and embraces environmental stewardship and economic vitality
- Decorative rock and inert materials where feasible to promote water efficient landscapes while maintaining consistency with City designs for street medians
- Definition and articulation of areas particularly suited to preserving and directing view orientation from both directions along the Corridor and suited to enhancing panoramic and scenic vistas that include foreground, middle ground, and background to enhance visual interest
- A unique and distinct landscape that creates a design vocabulary of images that reinforce the theme of "Aliso Viejo – Live, Work, Learn, Shop, Play," which may include enhancing Corridor gateways with appropriate signage, art in public places, and/or impressionable patterned landscape designs
- Conceptual designs that can easily be implemented within standards and guidelines established in the Caltrans Highway Design Manual, the Project Development Procedures Manual, the Plant Setback and Spacing Guide, and the Landscape Architecture Standards Manual
- Maximization of water efficiency through careful plant material selection and use of Remote Irrigation Control Systems principles

Land Use Initiative #76: The City should consider implementing pedestrian and transit oriented zoning in Town Center. The intent of the Zoning district would be to encourage higher density residential and mixed use projects within walking distance of local services, thereby reducing automobile trips.

Land Use Implementation Measure 76-A – The City should encourage “car free” or “car lite” development in Town Center by making parking requirements more flexible for developers and business owners who site near transit and who provide services, infrastructure and/or mitigation payments to reduce parking demand. Options a business owner could provide in lieu of providing parking spaces may include the following.



- Car share parking
- Indoor and outdoor bicycle parking
- Indoor showers and changing rooms for cycling employees
- Dedicated parking for electric vehicles, hybrids and plug-in hybrid vehicles
- Implementation of an Eco-Pass program for employees and tenants
- Mitigation payments that would be allocated to local transportation demand management projects

Land Use Implementation Measure 76-B – The City should consider developing and implementing an Information Technology center in Town Center for telecommuters to congregate within Aliso Viejo.

Land Use Implementation Measure 76-C – The City should attract more entertainment uses to the Town Center and Town Center vicinity. ~~The City should evaluate all new development in Town Center and the vicinity of Town Center using LEED Standards developed by the United States Green Building Council.~~

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EXISTING CITY OF ALISO VIEJO GENERAL PLAN, ZONING CODE, AND ORDINANCE

Existing City of Aliso Viejo General Plan, Zoning Code, and Ordinance

The City of Aliso Viejo General Plan and Municipal Code contain goals, policies, and requirements related to energy and resource conservation, as indicated in the following Table. The current General Plan will be updated comprehensively after City Council adoption of the Green City Initiative to ensure Green City Plan initiatives, policies and implementation measures become part of the General Plan.

Table 3
City of Aliso Viejo General Plan and Municipal Code
Goals, Policies, and Requirements Related to Energy and Resource Conservation

CITY DOCUMENT	TOPIC	GOALS/POLICIES/COMPLIANCE
General Plan Land Use Element	Landscaping	Policy LU-2.5: Emphasis on Drought Tolerant Native Species; Required through Conditions of Approval
	Pedestrian Friendly	Policy LU-3.4: Encourage innovative mixed-use; pedestrian friendly development to reduce traffic congestion
	CEQA/NEPA Compliance	Policy LU-4.5: Ensure City compliance with Federal/State environmental planning requirements; Compliance on individual project basis
	Recycling	Policy LU-8.2: Require recycling, composting, source reduction, education efforts; Compliance through Conditions of Approval
General Plan Circulation Element	Public Transportation	Goal C-3.1: Promote increased use of public transportation to reduce air pollution
	Pedestrian Friendly	Policy C-4.1: Improve City sidewalks to make them efficient and appealing for walking and bicycling safety; Pedestrian trail encircling Town Center
		Policy C-4.2: Provide safe and convenient pedestrian and bicycle connections to and from Aliso Viejo Town Center, etc.; Pedestrian trail encircling Town Center

General Plan Circulation Plan	Alternative Transportation Modes	Goal: City coordination with OCTA to expand and improve bus service within City
		Goal: City promotion of use of flexible car sharing programs, rideshare programs, park and ride lots
General Plan Conservation / Open Space Element	Water Conservation	Policy COS-1.2: Reduce amount of water used for landscaping; increase use of native and low water requirement plants; Compliance through Conditions of Approval
		Policy COS-1.3: Encourage use of recycled and reclaimed water for landscaping projects
	Air Quality	Goal COS-5: Improve air quality within City and region
		Policy COS-5.1: Integrate air quality planning with City land use, economic development, and transportation planning
		Policy COS-5.2: Support programs that reduce air quality emissions related to vehicular travel
		Policy COS-5.3: Support alternative transportation modes and technologies to reduce automobile emissions
		Goal COS-6: Encourage conservation of energy and identification of alternative energy sources
		Policy COS-6.1: Encourage green building design for new construction and renovation projects
		Policy COS-6.2: Coordinate with regional and local energy suppliers to ensure adequate supplies of energy, implement energy conservation, public conservation programs, and identify alternative energy sources where appropriate

		Policy COS-6.3: Encourage building orientations and landscaping that enhance natural lighting and sun exposure
		Policy COS-6.4: Encourage expansion of neighborhood level products and services and public transit opportunities throughout city to reduce automobile use
General Plan Conservation / Open Space Plan	Air Quality	Goal: Continued City cooperation with SCAQMD and SCAG to implement regional AQMP
		Policy: City will implement measures identified in SCAQMP re: hot spots and shading, and will encourage continued use of alternative transportation technologies (non-gasoline) powered autos; bicycles; electric powered personal transportation devices
		Policy: City will evaluate proposed development projects using LEED standards for new construction, major renovations, existing building operations, and commercial interior projects as part of development review
		Policy: City will provide education to staff, public and development community re: green building standards and methods of compliance
		Policy: City will continue to promote energy conservation by implementing State Title 24 building construction standards, complying with Energy Star conservation standards, and considering appropriate building orientation and landscaping during the development/design review process through implementation of the Zoning Ordinance
		Policy: City will coordinate with OCTA to expand transit opportunities and resources in City and to encourage alternative transportation technologies

General Plan Safety Element	Air Quality	Goal S-4: Protect community from hazards associated with air pollution
		Policy S-4.1: Participate in and support efforts by responsible federal, State, and County agencies to decrease air pollution emissions with air basin
General Plan Safety Plan	Air Quality	Goal: City reduces risk posed by air pollution by working with responsible federal, State and County agencies to decrease air pollution emissions occurring within this portion of the air basin
		Policy: City requires potential air pollution impacts on sensitive receptors (nursing homes; schools; residences) be analyzed during environmental review; Compliance on project basis
		Policy: Implementation and interpretation of General Plan policies should be consistent with SCAQMD Management Plan
General Plan Implementation Programs	Energy Conservation	IMP-2, Program I-1: Prepare, adopt, and implement a Zoning Ordinance and/or Specific Plans that specifically address the following: Set forth green building design standards and review/evaluate procedures consistent with LEED standards developed by U. S. Green Building Council; Establish residential density bonuses for compliance with LEED standards; Require compliance with Title 24 building construction standards, Energy Star conservation standards, and consider appropriate building orientation and landscaping for energy conservation purposes
	Bicycle and Pedestrian Amenities	IMP-14, Program II-8: Provide appropriate bicycle and pedestrian amenities (bicycle racks; water fountains; benches; trash cans; call boxes) along City bikeways, trails, and sidewalks. Encourage private development projects to provide these amenities, especially within Town Center

Recycling	<p>IMP-18, Program III-6:</p> <p>Require use of recycling as a condition of approval for all new development projects. Work with private sector contractor providing solid waste services within City to ensure appropriate recycling containers, procedures and education are readily available; Compliance through Conditions of Approval</p>
Transit-Oriented Design Features	<p>IMP-20, Program III-12:</p> <p>Require incorporation of transit-oriented design features and attractive and appropriate transit amenities into public and private development projects to promote and support public transit use</p>
Green Building and Energy Conservation	<p>IMP-21, Program III-14:</p> <p>Evaluate proposed development projects throughout City using LEED Standards developed by U. S. Green Building Council. Strongly encourage all future development and major renovation projects within following General Plan land use designations to achieve LEED certification: Very High Density Residential; Town Center commercial; Recreation Commercial; Business park; Professional Office; and, Community Facility; investigate potential to offer density bonus incentives on residential projects that achieve LEED certification; require compliance with State Title 24 building construction standards and Energy Star conservation standards for all development projects</p>
Annual Review of General Plan, Land Use Policy Map, Environmental Indicators	<p>IMP-23, Program IV-1:</p> <p>Annually review implementation of General and Land Use Policy Map to identify effect of land development and use on City revenues and costs of providing public facilities and services; develop range of environmental indicators (e.g., percentage of solid waste diverted from waste stream through recycling) to be monitored over time as community develops</p>
Source Reduction and Recycling Element	<p>IMP-25, Program IV-6:</p> <p>Continue implementing waste diversion programs and public education programs outlined in City's Source Reduction and Recycling Element required by AB 939</p>

	Alternative Transportation Technologies	IMP-26, Program IV-11: Promote and encourage use of electric and natural-gas fueled vehicles; support efforts to promote development and use of other alternative transportation technologies that contribute to improved air quality; consider future adoption of an ordinance requiring provisions for alternative fueled vehicles (e.g., charging or fueling stations) at or near major employment locations, shopping centers, public facilities and mixed-use developments
	Green Building Education and Training	IMP-26, Program IV-12: Provide staff support and public education regarding the City's proposed green building standards and methods of compliance
	Orange County Transportation Authority	IMP-34, Program V-10: Work closely with OCTA to achieve following: expanded and improved bus service within City; encourage provision of attractive and appropriate transit amenities, including shaded bus stops; support and implement OCTA Commuter Bikeways Strategic Plan and participate in future updates and revisions to the Plan
	Air Quality Management Plan	IMP-36, Program V-16: Work with SCAQMD and SCAG to implement Air Quality Management Plan and meet all federal and State air quality standards for pollutants; participate in any future amendments and updates to the Plan; implement and interpret the General Plan in a manner consistent with the Air Quality Management Plan
Zoning Code	Drought-Tolerant Plant Material	Section 15.14.110.D (Landscaping and Open Areas): "A minimum of 50 percent of plant material installed in projects approved after the effective date of this Code shall be of drought tolerant varieties...."; Compliance through Conditions of Approval
	Supplemental Nonresidential Regulations	Section 15.22.070 (Landscaping and Open Areas): "A minimum of 50 percent of plant material installed in projects approved after the effective date of this Code shall be of drought tolerant varieties...."; Compliance through Conditions of Approval

	Recycling Collection Facilities	Section 15.22.100.A (Recycling Collection Facilities): "Recycling collection facilities for the collection of non-hazardous household materials for recycling purposes, including attended collection centers and unattended drop-off bins and reverse vending machines may be established as an accessory use to an existing primary use in any nonresidential district"; Compliance in Pacific Park Plaza and Target Center
	Discretionary Permits	Section 15.74.020.D (Discretionary Permits): "Required Findings. 3. Compliance with CEQA. Processing and approval of the permit application are in compliance with the requirements of the California Environmental Quality Act"; Compliance on project basis
Ordinance No. 2004-060	Prohibition of use of expanded polystyrene food service products within City facilities and at special events	Prohibition of City purchasing or acquiring food service products produced with expanded polystyrene; prohibition of contracting parties from same in cases of agreements for usage of any City-owned or leased property; Compliance on project basis
Ordinance No. 2009-119	Water Efficient Landscape Regulations and Implementation Guidelines	Reduction of quantity of water used by persons within City for purpose of reducing waste associated with irrigation of outdoor landscaping and conserving water; Compliance on project basis

APPENDIX

- A. Glossary**
- B. Referenced Climate Action & Sustainability Plans**
- C. Sources**
- D. City of Aliso Viejo 2008 Greenhouse Gas Inventory**

APPENDIX A – GLOSSARY

AB – Assembly Bill

Adaptation – Adjustment in natural or human systems to a new or changing environment. Adaptation refers to adjustments in natural or human systems, intended to reduce vulnerability to actual or anticipated climate change and variability or exploit beneficial opportunities.

Agricultural Activity – Includes, but is not limited to, cultivation, growing, harvesting and production of any agricultural commodity and appurtenant practices incidental to production of agricultural commodities.

Air Pollutants – Amounts of foreign and/or natural substances occurring in the atmosphere that may result in adverse effects to humans, animals, vegetation and/or materials.

Air Resources Board (ARB) – In 1967, the California Legislature established the Air Resources Board to attain and maintain healthy air quality, conduct research into causes of, and solutions to, air pollution and to systematically attack air quality problems motor vehicles cause.

Alternative Energy – Energy derived from non-traditional sources (e.g. solar, compressed natural gas, hydroelectric, wind).

Alternative Planning Strategies – If the California Air Resources Board determines a region's Sustainable Communities Strategy will not achieve greenhouse gas emission reduction targets related to Senate Bill 375, a Metropolitan Planning Organization is required to prepare an Alternative Planning Strategy, separate from the Regional Transportation Plan, that identifies alternative development patterns, transportation

projects or transportation policies necessary to achieve targets.

Alternative Transportation – Forms of transportation that includes public transit, bicycle, walking, or alternative fuel vehicles.

Atmosphere – The gaseous envelope surrounding the earth. The dry atmosphere consists of nitrogen (78.1% volume mixing ratio), oxygen (20.9% volume mixing ratio), trace gases and radioactively active greenhouse gases. In addition, earth's atmosphere contains greenhouse gas water vapor, which typically amounts to approximately 1% volume mixing ratio, and clouds and aerosols.

Baseline – A standard by which environmental impacts are measured or compared, usually reflected by the existing on-the-ground conditions.

Best Available Control Measure (BACM) – A term used to describe the "best" measures (according to United States Environmental Protection Agency guidance) for controlling small or dispersed sources of particulate matter and other emissions from sources such as roadway dust, wood stoves and open burning.

Best Available Control Technology (BACT) – Under South Coast Air Quality Management District (SCAQMD) rules. This is defined as the most stringent emissions control which for a given air emission sources has been achieved in practice, is identified in a State Implementation Plan, or has been found by SCAQMD to be technologically achievable and cost effective.

Biofuel – A fuel produced from organic matter or combustible oils produced by plants (e.g. alcohol, black liquor from paper manufacturing, wood, soybean oil).

Biomass – Total dry weight of all living organisms that can be supported at each trophic level in a food chain. Also, materials that are biological in origin, including organic material (living and dead) from above and below ground (e.g. trees, crops, grasses, tree litter, roots, animals and animal waste).

Buildout – Development of land to its full potential or theoretical capacity permitted under current or proposed planning or zoning designations.

Business-As-Usual – The scenario in which policies to reduce greenhouse gas emissions are not enacted. This scenario assumes growth will occur following existing regulations and policies.

California Climate Action Registry (CCAR) – A private non-profit organization formed by the State of California that serves as a voluntary greenhouse gas emission registry to protect and promote early actions to reduce greenhouse gas emissions by organizations.

California Climate Adaptation Strategy – Summarizes best known science on climate change impacts to California and provides recommendations about how to manage risks.

California Energy Commission (CEC) – The commission that is California's primary energy policy and planning agency. It is responsible for promoting energy efficiency and renewable sources of energy.

California Environmental Quality Act (CEQA) – This Act was adopted in 1970 and incorporated in Public Resources Code Sections 21000-21177. The Act has as its primary purposes the following:

to inform governmental decision makers and the public about potentially significant environmental effects of proposed projects; to identify ways environmental damage can be avoided or significantly reduced; to require changes in projects through use of alternatives or mitigation measures when feasible; and, to disclose to the public reasons why a project was approved if significant environmental effects would occur.

California Green Building Standards Code (CALGreen) – The 2010 California Green Building Standards Code, commonly referred to as the CALGreen Code, is a statewide mandatory construction code that was developed and adopted by the California Building Standards Commission and the Department of Housing and Community Development. CALGreen standards require new residential and commercial buildings to comply with mandatory measures under the topics of planning and design, energy efficiency, water efficiency and conservation, material conservation and resource efficiency, and environmental quality. CALGreen also provides voluntary tiers and measures that local governments may adopt that encourage or require additional measures in the five green building types.

California Solar Initiative – Allows the California Public Utilities Commission to provide incentives to install solar technology on existing residential, commercial, nonprofit and governmental buildings if they are customers of the State's investor-owned utilities (Pacific Gas & Electric, San Diego Gas & Electric, and Southern California Edison).

Carbon Budget – The total quantity of greenhouse gas emissions that can be emitted by a sector or organization.

Carbon Dioxide (CO₂) – A naturally occurring gas, also a by-product of burning fossil fuels from fossil carbon deposits, such as oil, gas and coal, of burning biomass and of land use changes and other industrial processes. Carbon dioxide is the principal anthropogenic greenhouse gas that affects the earth's radiative balance. Carbon dioxide also is the reference gas against which other greenhouse gases are measured and therefore has a Global Warming Potential of 1.

Carbon Dioxide Equivalent - Carbon dioxide equivalent (CDE) and Equivalent carbon dioxide (or 'CO₂e') are two related but distinct measures for describing how much global warming a given type and amount of greenhouse gas may cause, using the functionally equivalent amount or concentration of carbon dioxide (CO₂) as the reference.

Carbon Dioxide Equivalent Metric Tonne (CO₂EMT) – A metric measure used to compare emissions from various greenhouse gases based upon their global warming potential. The carbon dioxide equivalent for a gas is derived by multiplying tons of the gas by the associated GWP.

Carbon Monoxide (CO) – A colorless, odorless, toxic gas produced by incomplete combustion of carbon in fossil fuels.

Carbon Sequestration – The capture and permanent storage of carbon dioxide.

Carbon Sinks – Natural or manmade systems that absorb carbon dioxide from the atmosphere and store them. Trees, plants and the ocean absorb carbon dioxide and therefore are carbon sinks.

CH₄ – Methane; a greenhouse gas.

City – Land, buildings and related items and structures within the geographic boundary of the

City of Aliso Viejo. The City is comprised of "community" and "municipal" components.

Clean Air Act – Requires the Environmental Protection Agency to set National Ambient Air Quality Standards for six common air pollutants, known as "criteria pollutants," that are found across the United States: particle pollution (particulate matter); ground level ozone; carbon monoxide; sulfur oxides; nitrogen oxides; and, lead. The Environmental Protection Agency regulates these pollutants by developing human health-based and/or environmentally based criteria (science-based guidelines) for establishing permissible levels.

Climate – Climate is usually defined as the average weather or as the statistical description in terms of the mean and variability of relevant quantities over a period of time ranging from months to thousands of years. The classical period for averaging these variables is 30 years, as defined by the World Meteorological Organization. The relevant quantities are most often surface variables such as temperature, precipitation and wind. In a broader sense, climate is the state, including a statistical description, of the climate system.

Climate Action Plan (CAP) – A planning document that intends to provide a policy and implementation framework for reducing greenhouse gas emissions within a defined jurisdiction. A Climate Action Plan typically provides an inventory of greenhouse gas emissions, specifies greenhouse gas emissions reductions levels, and provides policy makers with implementation measures for achieving targeted reductions.

Climate Change – Any long-term significant change in weather patterns of an area, which can occur naturally or by changes people have made to the land or atmosphere.

Climate Change Adaptation – The adjustment in natural or human systems to respond to actual or expected climate changes to minimize harm or take advantage of beneficial opportunities.

CO₂ – Carbon Dioxide; a greenhouse gas.

CO₂e – The universal unit measurement used to indicate global warming potential of each, or a combination of, greenhouse gases. The measurement used to evaluate impacts of releasing or avoiding release of different greenhouse gases.

Co-Benefits – An additional benefit occurring from implementation of a greenhouse gas emission reduction measure not directly related to reducing greenhouse gas emissions. Examples of co-benefits include energy conservation, air quality improvement, equity promotion, public health improvement, local economy support, water use reduction, mobility improvement, educational opportunity provision, monetary savings, and State policy implementation.

Community – The land, buildings and other such items and structures not owned or operated by the City of Aliso Viejo.

Complete Streets – Complete Streets policies ensure transportation planners and engineers consistently design and operate the entire roadway with all potential users in mind. This includes bicyclists, public transportation vehicles and riders, and pedestrians of all ages and abilities. In 2007, the State of California adopted Assembly Bill 1358, which directs the legislative body of a city or county, upon revision of the circulation element of its general plan, to identify how the jurisdiction will provide for the routine accommodation of all users.

Composting – The process by which discarded organic materials are converted to usable

products through controlled biological decomposition.

Compressed Natural Gas – A fossil fuel substitute for gasoline, diesel, or propane that can be used in passenger and heavy duty vehicles.

Conservation – Planned management of a natural resource to prevent exploitation, destruction, or neglect.

Construction and Demolition Waste – These materials consist of the waste generated during construction, demolition or renovation of buildings, roads and other construction projects; materials may include heavy, bulky materials such as concrete, glass, wood and metal.

Density – The average number of people, families or housing units on one unit of land; expressed as dwelling units per acre.

Distributed Generation – Any small scale electric generation, located at or near the point of end use.

Diversification – All waste kept out of a landfill through recycling, beneficial reuse, composting, or other means.

DU – Dwelling Unit.

Ecological Footprint – The impact of humans on ecosystems created by their use of land, water and other natural resources; ecological footprint used as a complex sustainability indicator that answers the question: How much of earth's resources does one's lifestyle require?

Ecosystem – The species and natural communities of a specific location interacting with one another and with the physical environment

EIR – see **Environmental Impact Report**.

Embodied Energy – The amount of energy consumed over the life cycle of a material, including energy used in manufacturing or extraction, delivery, and disposal or recycling of the material.

Emission Standard – Maximum amount of pollutant legally permitted to be discharged from a single source, either mobile or stationary.

Emissions – Unwanted substances released by human activity into air or water.

Emissions Intensity – The ratio of greenhouse gas emissions to a unit of relevant measurement; the measurement of the polluting level of a given activity.

Energy Audit – The inspection, survey and analysis of energy flows in a building, process or system with the objective of understanding energy dynamics of the system under study. Typically an energy audit is conducted to seek opportunities to reduce the amount of energy input into the system without negatively impacting the output. When the object of study is an occupied building, reducing energy consumption while maintaining or improving human comfort, health and safety are primary concerns.

Energy Conservation – Reducing energy waste.

Energy Efficiency – Using less energy to provide an equivalent level of energy service. Examples include insulating a home to use less heating and cooling energy to achieve the same temperature and installing fluorescent lights and/or skylights instead of incandescent lights to attain the same level of illumination. Efficient energy use is achieved primarily by means of a more efficient technology or process rather than by changes in individual behavior.

ENERGY STAR – An international standard for energy efficiency in consumer products, ranging from small appliances to new homes; specifications differ for each product and are established by the Environmental Protection Agency or the Department of Energy.

Energy Start Portfolio Manager – An online management tool that allows nonresidential building owners and tenants to track and assess energy and water use over time, which allows building owners to identify investment priorities, determine underperforming buildings, and verify efficiency improvements.

Environmental Impact Report (EIR) – A report required by the California Environmental Quality Act that assesses all environmental characteristics of an area and determines what effects or impacts will result if the area is altered or disturbed by a proposed action or project.

Environmentally Preferable – Any product, service, activity or process that has a lesser or reduced effect on human health and the environment when compared to other products, services, activities or processes that serve the same purpose.

Environmental Protection Agency (EPA) – The federal body charged with responsibility for natural resource protection and oversight of release of toxins and other threats to the environment.

Feasible – Capable of being accomplished in a successful manner within a reasonable time considering economic, environmental, social and technological factors.

Fossil Fuel Facilities – Include, but are not limited to, oil and gas wells, separators and refineries.

Fossil Fuels – Carbon based fuels from fossil hydrocarbon deposits, including coal, peat, oil and natural gas.

Fuel Cells – Electro-chemical devices similar to batteries that use a continuous supply of hydrogen to produce electricity.

Global Warming – Global warming refers to the gradual increase, observed or projected, in global average surface temperatures, as one of the consequences of radiative forcing caused by anthropogenic emissions.

Global Warming Potential (GWP) – is a relative measure of how much heat a greenhouse gas traps in the atmosphere. It compares the amount of heat trapped by a certain mass of the gas in question to the amount of heat trapped by a similar mass of carbon dioxide. A GWP is calculated over a specific time interval, commonly 20, 100 or 500 years.

Just as radiative forcing provides a simplified means of comparing the various factors that are believed to influence the climate system to one another, global-warming potentials (GWPs) are one type of simplified index based upon radiative properties that can be used to estimate the potential future impacts of emissions of different gases upon the climate system in a relative sense. GWP is based on a number of factors, including the radiative efficiency (infrared-absorbing ability) of each gas relative to that of carbon dioxide, as well as the decay rate of each gas (the amount removed from the atmosphere over a given number of years) relative to that of carbon dioxide.

GWP can be expressed as the cumulative radiative forcing effects of a gas over a specified time horizon resulting from emission of a unit mass of gas relative to a reference gas. The GWP weighted emissions of direct greenhouse gases in the United States inventory are presented in

terms of equivalent emissions of carbon dioxide, using units of teragrams of carbon dioxide equivalents (TgCO₂EMT).

Conversion Tg = 109 kg = 106 metric tons = 1 million metric tons.

Carbon comprises 12/44 of carbon dioxide by weight because the molecular weight of carbon is 12 and the molecular weight of CO₂ is 44.

Green Building or Green Design – Building design that yields environmental benefits, such as savings in energy, building materials, water consumption or reduced waste generation.

Green Waste – Refers to lawn, garden or park plant trimmings and materials and can be used in home composts or picked up curbside by municipal waste haulers.

Greenfield – Previously undeveloped land.

Greenhouse Gas (GHG) – Gas in an atmosphere that absorbs and emits radiation within the thermal infrared range. This process is the fundamental cause of the greenhouse effect, which causes warming of the earth's atmosphere; any gas that absorbs infrared radiation in the atmosphere. Includes, but is not limited to, carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), chlorofluorocarbons (CFC), hydrochlorofluorocarbons (HCFC), ozone (O₃), hydrofluorocarbons (HFC), perfluorocarbons (PFC), and sulfur hexafluoride (SF₆).

Greenhouse Gas Inventory – An accounting of the amount of greenhouse gases discharged into the earth's atmosphere, usually within a defined jurisdiction.

Greywater – Recycled water.

Hydrocarbons – Substances containing only hydrogen and carbon; fossil fuels are composed of hydrocarbons.

Hydropower – The force of flowing water moving downstream creates energy that can be harnessed and turned into electricity; this is called hydroelectric power or hydropower.

ICLEI – ICLEI-Local Governments for Sustainability, USA; a membership association of local governments committed to advancing climate protection and sustainable development.

Impact Fees – Fees imposed on new development to fund public facility improvements required by new development and ease fiscal burdens on localities.

Impervious Surface – Ground surface that cannot be penetrated by water; includes paved and compacted surfaces as well as those covered by buildings.

Indicator – Types of data or information that can be used to determine progress or success of each reduction measure.

Infill Development – Development projects that use vacant or underutilized land in previously developed areas for buildings, parking and other uses.

Infrastructure – Water and sewer lines, roads, urban transit lines, schools and other public facilities needed to support developed areas.

Intermodal – Those issues or activities that involve or affect more than one mode of transportation, including transportation connections, choices, cooperation and coordination of various modes; also known as "multimodal".

Invasive Species – Species that establish and reproduce rapidly outside of their native range and may threaten diversity or abundance of native species through competition for resources, predation, parasitism, hybridization with native populations, introduction of pathogens, or physical or chemical alteration of the invaded habitat.

Land Use – The manner in which a parcel of land is used or occupied.

Leadership in Energy and Environmental Design (LEED) – A Green Building Rating System developed by the United States Building Council that provides a suite of standards for environmentally sustainable construction; ratings are based on a point system whereby points are awarded for various elements that can be chosen during the planning, design, and building processes in 5 key areas: sustainable site development; water savings; energy efficiency; materials selection; and, indoor environmental quality.

Life Cycle Costing – The process of evaluating total overall costs and benefits of buildings or equipment over time, including initial costs of design and construction, operating costs, long-term costs of maintenance, repair, and replacement, and other environmental or social costs over its full life, rather than solely based on purchase cost.

Light-Emitting Diode (LED) – Energy efficient lighting technology that uses 80-90 percent less energy than conventional lights.

Live-Work Unit – An integrated housing unit and working space, occupied and utilized by a single household in a structure that has been designed or structurally modified to accommodate joint residential occupancy and work activity, and which includes: complete kitchen space and sanitary facilities in compliance with the Building Code; and, working space reserved for and regularly used by one or more occupants of the unit; in this type of unit, the "work" component is secondary to the residential component and may include only commercial activities and pursuits that are compatible with the character of a quiet residential environment.

Low Impact Development (LID) – An approach to environmentally friendly land use planning that includes a suite of landscaping and design techniques that attempt to maintain the natural pre-developed ability of a site to manage rainfall. LID techniques capture water on site, filter it through vegetation, and let it soak into the ground where it can recharge the local water table rather than being lost as surface runoff. An important LID principle includes the idea storm water is not merely a waste product to be disposed of; rather, it is a resource.

LOS – Level of Service.

Methane (CH₄) – a hydrocarbon that is a greenhouse gas with a global warming potential most recently estimated at 23 times that of carbon dioxide; methane is produced through anaerobic (without oxygen) decomposition of waste in landfills, animal digestion, decomposition of animal wastes, production and distribution of natural gas and petroleum, coal production, and incomplete fossil fuel combustion.

Metric Tonne – Common international measurement for the quantity of greenhouse gas emissions; one metric ton is equal to 2,205 pounds or 1.1 short tons.

Metropolitan Planning Organization (MPO) – The body that establishes and carries out Regional Transportation Plans; created by the 1962 Federal-Aid Highway Act; these organizations are required for any urban area with a population in excess of 50,000.

Mixed Use Development – Development created in response to patterns of separate uses typical in suburban areas necessitating reliance on cars. Mixed use development developments include residential, commercial and business accommodations in one area.

Municipal – Land, buildings or other such items or structures owned and operated by the City of Aliso Viejo

National Ambient Air Quality Standards – The prescribed level of pollutants in the outside air that cannot be exceeded legally during a specified time in a specified geographical area.

Native Species – A species within its natural range or natural zone of dispersal; that is, within the range it would or could occupy without direct or indirect introduction and/or care by humans.

Neighborhood Electric Vehicle – Small, battery powered, low speed electric vehicles typically limited to streets with a posted speed limit of 25 miles per hour or less; the California Air Resources Board classifies these vehicles as zero emissions vehicles because they do not emit any tailpipe emissions.

Nitrogen Oxides (NO_x) – Gases that consist of one molecule of nitrogen and varying numbers of oxygen molecules; nitrogen oxides are produced in the emissions of vehicle exhausts and from power station; in the atmosphere, nitrogen oxides can contribute to formation of photochemical ozone (smog), can impair visibility, have health consequences and are considered pollutants.

Nitrous Oxide (N₂O) – A powerful greenhouse gas with a global warming potential of 296 times that of carbon dioxide. Major sources of nitrous oxide include soil cultivation practices, especially use of commercial and organic fertilizers, fossil fuel combustion, nitric acid production and biomass burning.

Nonattainment – The condition of not achieving a desired or required level of performance; frequently used in reference to air quality.

Non-Renewable Energy – Energy from sources that use a non-renewable natural resource such as uranium or fossil fuels.

OCTA – Orange County Transportation Authority.

Office of Planning and Research (OPR) – A California State office comprised of the following: State Clearinghouse; Legislative Unit; Policy and Research Unit; Office of Small Business Advocacy; and, Advisory for Military Affairs. The Office has an important place in the Governor's administration and provides legislative and policy support for the Governor's office.

Open Space – Descriptive of undeveloped land or land used for recreation. Farm land and all natural habitats are included in this land use category.

Orange County Council of Governments – One of 14 regional sub-agencies under the Southern California Association of Governments; has jurisdiction over Orange County.

Ordinance – A law or regulation set forth and adopted by a governmental authority, usually a city or county.

Ozone (O₃) – A molecule of three oxygen atoms; a colorless gas formed by a complex series of chemical and photochemical reaction of reactive organic gases, principally hydrocarbons, with

oxides of nitrogen (which is harmful to human health), biota, and some materials.

Particulate Matter – Very small pieces of solid or liquid matter such as particles of soot, dust, fumes, mists or aerosols; physical characteristics of particles, and how they combine with other particles, are part of the feedback mechanisms of the atmosphere.

Parts Per Million (PPM) – The number of "parts" by weight of a substance per million parts of water; commonly used to represent pollutant concentrations; large concentrations are expressed in percentages.

Permeability – Measurement of a material's ability to allow passage of moisture; for landfill applications, it usually is expressed in centimeters per second.

Photovoltaic – Literally, "light" (photo) and "electricity" (voltaic); the class of equipment used to generate electricity directly from sunlight.

Radiation Balance – The vast majority of the energy which affects Earth's weather comes from the Sun. The planet and its atmosphere absorb and reflect some of the energy, while long-wave energy is radiated back into space. The balance between absorbed and radiated energy determines the average temperature. The planet is warmer than it would be in the absence of the atmosphere: see greenhouse effect.

The radiation balance can be altered by factors such as intensity of solar energy, reflection by clouds or gases, absorption by various gases or surfaces, emission of heat by various materials, and other factors related to climate change. Any such alteration is a radiative forcing, and causes a new balance to be reached. In the real world this happens continuously as sunlight hits the surface, clouds and aerosols form, the concentrations of atmospheric gases vary, and seasons alter the ground cover.

Radiative Forcing – In climate science, radiative forcing is generally defined as the change in net irradiance between different layers of the atmosphere. Typically, radiative forcing is quantified at the tropopause in units of watts per square meter. A positive forcing (more incoming energy) tends to warm the system, while a negative forcing (more outgoing energy) tends to cool it. Sources of radiative forcing include changes in insolation (incident solar radiation) and in concentrations of radiatively active gases and aerosols.

Radiative Forcing Capacity (RF) – Is the amount of energy per unit area, per unit time, absorbed by the greenhouse gas, that would otherwise be lost to space. It can be expressed by the formula:

$$RF = \sum_{n=1}^{100} Abs_i * F_i / (pathlength * density)$$

Recharge – Water that infiltrates into the ground, usually from above, that replenishes ground water reserves, provides soil moisture, and affords evapotranspiration.

Reclaimed/Recycled Water – Wastewater that has been treated to remove impurities and then allowed to recharge an aquifer; typically accomplished by using reclaimed water for irrigation; typically intended solely for non-potable uses, such as landscape maintenance.

Recycling – The process of collecting, sorting, cleansing, treating and reconstituting materials that would otherwise become solid waste, and returning them to the economic mainstream in the form of raw material for new products; this does not include conversion of waste into energy.

Reduction Measure – A goal, strategy, program, or set of actions that target and reduce a specific source of greenhouse gas emissions.

Regional Transportation Plan (RTP) – A long-term blueprint of a region's transportation system; related to Senate Bill 375.

Renewable Energy – Energy generated from natural resources such as sunlight, wind, rain, tides and geothermal heat that are naturally replenished.

Renewable Portfolio Standard – California State regulation requires publicly-owned utilities to produce 33% of electricity using renewable energy sources.

Retrofit Upon Sale – Requirements on real property to replace inefficient water or energy fixtures as a condition of escrow; retrofit upon sale requirements typically require a certificate or other form of verification from local government agencies to ensure fixtures are replaced and meet minimum efficiency requirements.

Safe Routes to School – A national movement aimed at providing safe environments to encourage walking and bicycling surrounding local schools through engineering, enforcement, education, encouragement and evaluation; safe Routes to School programs typically are funded through federal, state and local grants.

SB – California State Senate Bill.

SB 375 – The Transportation and Land Use Planning Act (2008); builds on climate change legislation signed into California law in 2006 (Assembly Bill 32) and the regional "blueprint plan" developed in the Sacramento region; the bill's primary provision is a requirement for regions with high air pollution to develop a "Sustainable Communities Strategy" to reduce greenhouse gas emissions from automobiles.

Smart Grid – The smart grid delivers electricity from suppliers to consumers using two-way digital communications; the smart grid is envisioned to overlay the ordinary electrical grid with an information and net metering system, which includes smart meters. Smart meters will allow consumers to become more aware of their energy use and in the future will allow smart grid enabled appliances to be pre-programmed to operate at a time when electricity costs are lowest.

Solar Power (or energy) – Use of sunlight, or solar energy, to heat and light buildings, generate electricity (using solar photovoltaic systems – PV cells/panels), heat hot water, and for a variety of commercial and industrial uses.

Solid Waste – Garbage, refuse, sludge and other discarded material, including solid, liquid, semi-solid or contained gaseous material resulting from industrial, commercial, mining and agricultural operations and from community activities; does not include solid or dissolved material in domestic sewage, or solid or dissolved materials in irrigation return flows or industrial discharges, or sources of special nuclear, or by-product material.

Sprawl – Development patterns where rural land is converted to urban/suburban uses more quickly than needed to house new residents and support new businesses, and people become more dependent on automobiles; sprawl defines patterns of urban growth that include large acreage of low density residential development, rigid separation between residential and commercial uses, residential and commercial in rural areas away from urban centers, minimal support for non-motorized transportation methods, and a lack of integrated transportation and land use planning.

Streetscape – The space between buildings on either side of a street that defines its character;

the elements of a streetscape include the following: building frontage/façade; landscaping (e.g. trees, yards, bushes, plantings); sidewalks; street paving; street furniture (e.g. benches, kiosks, trash receptacles, fountains); signs; awnings; and, street lighting.

Sulfur Oxides (SO_x) – The group of compounds formed during combustion or thereafter in the atmosphere of sulfur compounds in the fuel, each having various levels of oxidation, ranging from two oxygen atoms for each sulfur atom to four oxygen atoms.

Sustainable Development – Development that meets needs of the present without compromising ability of future generations to meet their needs.

Sustainable Communities Strategy (SCS) – Plans Metropolitan Planning Organizations are required to develop as part of their Regional Transportation Plans that demonstrate how regional greenhouse gas emissions targets will be met (related to Senate Bill 375).

Title 24 – The portion of the California Code of Regulations that regulates building envelopes and building energy efficiency.

Transit Oriented Development (TOD) – Development of housing, commercial space, services and job opportunities in close proximity to public transportation; this reduces dependency on automobiles and time spent in traffic, which protects the environment and can ease traffic congestion, as well as increasing opportunity by linking residents to jobs and services.

Transportation Demand Management Strategies (TDM) – A general term for strategies that result in more efficient use of transportation resources, including incentives to reduce driving, use alternative options, and improve traffic.

ULI – Urban Land Institute.

United States Green Building Council (USGBC) – A non-profit trade organization headquartered in Washington, D. C. dedicated to promoting green building practices.

Urban Heat Island – Describes built areas that are hotter than nearby rural areas; on a hot, sunny day, roof and pavement surface temperatures can be 50-90 degrees Fahrenheit hotter than the air, while shaded or moist surfaces remain close to air temperatures; surface urban heat islands, particularly during summer, have multiple impacts and contribute to atmospheric urban heat islands; heat islands can affect communities by increasing summertime peak energy demand, air conditioning costs, air pollution and greenhouse gas emissions, heat related illness and mortality, and water quality.

VMT – Vehicle Miles Traveled.

Volatile Organic Compounds – A variety of chemicals with both short term and long term adverse health effects; these are emitted as gases from a wide array of products such as paints, lacquers, cleaning supplies, markers and office equipment and furnishings.

Vulnerable Populations – Those at risk to adverse climate change impacts due to exposure, sensitivity, or adaptive capacity; physical conditions may put particular populations at risk to impacts of climate change.

Water Conservation – Reducing water use.

Water Efficient Landscape – Native or low water using landscapes; these landscapes are required by law in all cities and counties in California.

Weather – Atmospheric condition at any given time or place, measured in terms of such things

as wind, temperature, humidity, atmospheric pressure, cloudiness, and precipitation.

Wind Power – Harnessing the wind to generate electricity; wind turbines produce electricity when wind turns blades connected to a shaft that drives a generator.

Wind Turbine – A machine that converts kinetic energy in wind into mechanical energy; if the resulting energy is used directly by machinery, such as a pump, the machine usually is called a windmill; if energy is converted to electricity, the machine is called a wind generator.

Zero Emissions Vehicle – A vehicle that does not emit any tailpipe emissions from the on-board source of power.

Zero Net Energy (ZNE) – An entity that produces as much energy as it consumes; often referring to a building or group of buildings.

APPENDIX B – REFERENCED CLIMATE ACTION & SUSTAINABILITY PLANS

The authors of this Green City Initiative considered the following Climate Action and/or Sustainability Plans of the following jurisdictions in preparation of the City of Aliso Viejo Green City Initiative.

California Cities:

City of Apple Valley
City of Benicia
City of Berkeley
City of Citrus Heights
City of Fort Bragg
City of Glendale
City of Huntington Beach
City of Irvine
City of Laguna Beach
City of Lake Elsinore
City of Los Angeles
City of Manhattan Beach
City of Martinez
City of Monterey Park
City of Oakland
City of Palo Alto
City of Piedmont
City of Redondo Beach
City of Richmond

City of Sacramento
City of San Carlos
City of San Clemente
City of San Diego
City of San Rafael
City of Santa Monica
City of Union City
City of Vallejo
City of Walnut Creek
City of West Hollywood

California Counties:

County of San Luis Obispo

Cities outside California:

City of Chicago, Illinois
City of Portland, Oregon
City of Pittsburgh, Pennsylvania

APPENDIX C – SOURCES

California Air Resources Board, 2010, "Assembly Bill 32: Global Warming Solutions Act," <http://www.arb.ca.gov/cc/ab32/ab32.htm>

California Energy Commission, 2006, "Our Changing Climate: Assessing the Risks to California," Web Document, Sacramento

California Energy Commission, 2009, "California Energy Commission's Climate Change Activities," <http://www.energy.ca.gov/climatechange/index.html>

California Natural Resources Agency, 2009, "California Climate Adaptation Strategy, Sacramento, California

Intergovernmental Panel on Climate Change, 2007, "Climate Change 2007: The Physical Science Basis. Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change," Cambridge, Cambridge University Press

California Air Resources Board, 2010, "Clean Car Standards – Pavley, Assembly Bill 1493," <http://www.arb.ca.gov/cc/ccms/ccms.htm>

California Air Resources Board, 2011 "Low Carbon Fuel Standard Program" <http://www.arb.ca.gov/fuels/lcfs/lcfs.htm>

California Building Standards Commission, 2010, "2010 California Green Building Standards Code" Sacramento, California, California Building Standards Commission.

California Energy Commission, 2007, "Impact Analysis: 2008 Update to the California Energy Efficiency Standards for Residential and Nonresidential Buildings," Sacramento, California,

California Energy Commission, 2010, "2009 California Residential Appliance Saturation Study," Sacramento, California

California Energy Commission and California Public Utilities Commission, 2011, "About the California Solar Initiative," <http://www.gosolarcalifornia.org/about/csi/php>

California Public Utilities Commission, 2009, "33% Renewables Portfolio Standard: Implementation Analysis Preliminary Results." Sacramento, California

California Resources Agency, "2009 California Climate Adaptation Strategy: A Report to the Governor of the State of California in Response to Executive Order S-13-2008"

APPENDIX D – CITY OF ALISO VIEJO 2008 GREENHOUSE GAS INVENTORY